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The Oliver-Sharpey Lectures

ON

SOME EFFECTS WHICH FOLLOW UPON CHANGES IN THE REACTION OF THE BLOOD.

Delivered before the Royal College of Physicians of London on March 31st and April 2nd, 1914,

BY F. GOWLAND HOPKINS, M.A. CANTAB., M.B., D.SC. LOND., F.R.C.P. LOND., F.R.S.,

READER IN CHEMICAL PHYSIOLOGY IN THE UNIVERSITY OF CAMBRIDGE.

LECTURE II.[1]

Delivered on April 2nd.

MR. PRESIDENT AND GENTLEMEN,—At the close of my first lecture I pointed out that a change of reaction in the blood may be responsible for the increase of metabolism in fever. This leads me to say a few words concerning the effects upon metabolism which are observed after experimental interference with the reaction.

METABOLISM AND BLOOD REACTION.

Bearing on the effects of administering acids and alkalies to man, there is, of course, a large literature, dating from many years back. It is a somewhat tangled literature, but one may safely say, I think, that, taking the evidence as a whole, we have a genuine basis for the belief that the administration of alkali increases, while giving acids diminishes, the oxidative processes of metabolism. I will turn for a moment to experiments done upon animals in this connexion. An old observation made by Lehmann seemed to show that in rabbits there was a definite decrease of oxygen consumption when acids were injected into the circulation, and an increase as the result of injecting alkalies. Recent experiments carried out by Szili[2] have proved that injections of acids in the quantities so employed definitely increase the hydrogen ion concentration in the blood, though it may still react alkaline to lacmoid. Experiments similar to those of Lehmann, published during the present year by Leimdörfer,[3] show plainly enough a fall in oxygen consumption after the injection of acids, but this observer claims to have obtained in some experiments a fall in the case of alkalies also, though his protocols show a number of cases in which there was a marked rise. So far, however, as such experiments are of any value, more weight should be attached to the results of acid administration than to the effects of alkali. In the case of the former, the depression of metabolism is seen in spite of increased activity in the respiratory muscles. Moreover, as we have learned, a rise in hydrogen ion concentration, because of its effect upon oxyhæmoglobin, tends to increase the rapidity of the oxygen supply to the tissues. Any secondary effects due to the acid would therefore tend to limit rather than increase its direct effect upon metabolism. With alkalies, on the other hand, we have to reckon with the pleionexy which must result from their injection. This might interfere with the supply of oxygen to the tissues and obscure the direct influence of the alkali. The effect upon the dissociation curve of hæmoglobin has indeed to be remembered in the interpretation of the results of all such experiments.

More satisfactory are observations upon the results of administering acids and alkalies by the mouth. Almost the only research of importance on these lines is that of Chvostek[4] (1893), in which rabbits received 0·9 gramme of hydrochloric acid per kg. of body weight, administered by the mouth in two or three portions during 24 hours. As measured either by the oxygen consumption or by heat production there was an extremely well-marked depression in metabolism, amounting in the case of two of the animals to 31 and 49 per cent. respectively.

Carbohydrate Metabolism.

Evidence for the lessening of metabolic processes as the result of increase of acidity comes to light very clearly in the interesting observations of Rona and Willenko[5] upon the isolated perfused heart. The experiments show that the utilisation of sugar by the heart is depressed by rise of acidity in the circulating medium. An alteration in the hydrogen ion concentration leading to a comparatively small departure from the normal reaction of the blood on the side of acidity prevents altogether the utilisation of the sugar supplied to the organ. These experiments are especially interesting in that the actual ionic acidity was measured and controlled, while the effect of varying it could be observed apart from all complicating factors. The experiments do not, of course, show at what stage in the course of sugar utilisation the inhibition occurs. It may be that a process which necessarily precedes oxidation is interfered with, rather than the oxidation process itself; the formation of glycogen, for instance, or some other synthetic process. The raising of this point suggests reference to another line of inquiry which has occupied a number of observers—I mean the question as to how far a change of reaction in the body fluids affects the stability of its carbohydrate stores. It is a question which from the first greatly interested Pavy, and his interest in it remained to the end of his life. In his book upon diabetes, published so far back as 1869, he describes experiments of his own bearing upon the matter, and he was engaged upon similar ones during the year in which he died. He, in conjunction with Bywaters, had shown that alkalies inhibit while acids accelerate the post-mortem destruction of glycogen in the liver, and in 1911, quite shortly before his death, he demonstrated to the Physiological Society the fact that the glycosuria induced in cats by chloroforming was arrested by carefully conducted intravenous injection of sodium carbonate. Dr. Pavy more than once talked with me concerning this phenomenon, and I know that he believed to the last that it was of real importance in connexion with diabetes.

Külz, so far back as 1881, observed glycosuria after injecting phosphoric acid intravenously into rabbits, and many experiments of like kind with similar results are described in the literature. It is clear that such experiments alone do not enable us to judge how the acid and alkali act; whether by respectively mobilising or stabilising the glycogen stores or by affecting the oxidative powers of the tissues. In all such observations we have, moreover, to think of a possible intrusion of the suprarenal function. But Macleod,[6] like Pavy, finds that a very small increase of acidity accelerates

[1] Lecture I. was published in THE LANCET of June 6th, 1914, p. 1589.
[2] Pflüger's Archiv, 115, 82 (1906).
[3] Biochemische Zeitschrift, 59, 451.
[4] Centralblatt für Innere Medicine, Band xiv., p. 329.
[5] Biochemische Zeitschrift, 59, 173 (1914).
[6] Diabetes, p. 123.

glycogenolysis. There is no doubt that the optimum action of the liver diastase occurs slightly on the acid side of neutrality, and little doubt that a small change in H ion concentration greatly affects the stability of the glycogen in the liver cell. Elias[7] has quite recently published an account of a fresh study of the relation between acid intoxication and glycosuria. He found, in what seem to have been carefully controlled experiments, that giving comparatively small amounts of hydrochloric acid by the mouth greatly reduced the percentage of glycogen in the liver of normal rabbits. Hyperglycæmia and glycosuria were also observed. Even dogs, which are so much less sensitive to the effects of acid, became under similar treatment hyperglycæmic and glycosuric. Elias brings forward evidence to show that the suprarenal gland was in no way responsible for these results. When the isolated livers of turtles were perfused with sugar solution containing N/200 hydrochloric acid there was rapid loss of glycogen from the liver, while, conversely, there was definite glycogen formation in the organ as a result of perfusing it with a sugar solution made slightly alkaline.

Elias and Kolb[8] have further demonstrated an effect of a change of blood reaction upon carbohydrate metabolism in a condition which, though special and not displayed by man, is instructive. In the year 1890 Hofmeister pointed out that young dogs after temporary starvation exhibit a greatly diminished tolerance for sugar. It is shown by the above authors that the condition is due to the diminished alkalinity of the blood. Unfortunately they relied upon titration figures for their estimations, but, as they point out, Rolly has shown by direct measurement that starvation in dogs appreciably raises the H ion concentration. The glycosuria which results upon giving sugar may be wholly prevented by the simultaneous administration of alkali. This effect of starvation is certainly not due to any stimulation of the suprarenals. It occurs after the sympathetic nerves have been cut.

The recent experiments of Merlin and Kramer[9] have apparently a similar bearing. If acids be administered to a depancreatised dog the sugar excretion displays a sharp rise, while a dose of alkali promptly diminishes the output.

Taking all these facts into consideration, it seemed not impossible that comparatively small doses of acid taken by the mouth might to some degree affect the amount of sugar in the blood of a normal individual. Cole has tested this point on several occasions by taking himself doses equal to 1 gramme of pure hydrochloric acid, but he found no measurable effect. Evidence depending upon the use of such small doses is, of course, of no value as against the view that change of reaction in the liver or of the hepatic blood can mobilise glycogen; but it is interesting to note that they seem sufficient to produce a measurable lowering of the alveolar CO_2 tension and to affect the dissociation curve of oxyhæmoglobin. Barcroft found this, at any rate, on the one occasion on which Cole's blood was tested. This was two hours after a gramme dose of HCl. There was, of course, no meionexy, but the curve was found to be shifted when points were determined in the presence of a normal instead of the lowered tension of CO_2, so that the addition of acid to the blood could be demonstrated.

That mobilisation of glycogen by increase of acidity may play a part in a kind of automatic regulation of the blood sugar—a low concentration of sugar leading to acid production in the liver, and this in turn yielding more sugar to the blood—is a doubtful if tempting hypothesis. But we must certainly not forget that local changes of reaction may be of importance in connexion with sugar mobilisation; nor, indeed, that such local changes may be significant in much wider connexions.

METABOLIC FACTORS IN CONTROL OF BLOOD REACTION.

I propose to deal with such local changes after saying first a few words on a more general point. I may speak of the tissues without departing from my theme. The reaction of the blood cannot, of course, be really considered apart from the reaction of the tissues. Adjustment of reaction in the blood is only an aspect of adjustment throughout the body. We have to recognise that in the tissues local changes of reaction may occur, of a temporary or, under abnormal conditions, of a more permanent character.

When in my previous lecture I dealt with the control of blood reaction I was concerned with only one side of the subject. The physico-chemical and secretory factors which so rapidly adjust the blood reaction to a mean value are continuously called into action by the vagaries of metabolism; but metabolic factors also play their part in the adjustment itself. We think at once of the familiar reaction of the body whereby ammonia is produced to meet a relative deficiency of bases. Now this supply of ammonia would seem to call for changes in metabolism much more deep-seated than those hitherto pictured as requisite. We have been inclined to attribute the existence of ammonia in the urine during various conditions of acidosis as due merely to a partial arrest in the process of the conversion of ammonium salts into urea. But McCollum and Hoagland[10] have carried out experiments in which pigs were kept on a dietary consisting only of starch mixed with either acid, neutral, or basic salts, or, in other cases, mixed with free mineral acids. The nitrogenous metabolism was, therefore, wholly endogenous. Quantitative comparison showed that the extra ammonia excreted on the acid dietaries was not part of that which, in the absence of acids, becomes urea, but represented added nitrogen drawn from the tissues. As the authors point out, their results recall the equilibrium theory which Schryver[11] put forward eight years ago. Schryver had himself previously shown that acids accelerate the action of autolytic ferments. Now the amino-acids liberated by these enzymes are the source of the ammonia which serves for the neutralisation of acids. With a normal food-supply neutralisation is secured by the presence of fixed bases in the diet, aided, if necessary, by ammonia derived from the amino-acids of the food. But consider what occurs in starvation. Here we get acidosis owing to the absence of carbohydrates, and no extraneous supply of bases or of amino-acids to yield ammonia. Tissue acidity (or decrease of tissue alkalinity) results; the action of the autolytic ferments is therefore accelerated, and the production of ammonia from the liberated amino-acids is accurately adjusted

[7] Biochemische Zeitschrift, 48, 120.
[8] Ibid., 52, 331.
[9] Journal of Biological Chemistry, vol. xv., p. 365.
[10] Journal of Biological Chemistry, vol. xvi., 1913, p. 299.
[11] Biochemical Journal, vol. i., 1906, p. 123.

to meet the requirements of neutralisation. The process of autolysis is thereby checked, and adjustment becomes automatic. This, very partially and dogmatically stated, is Schryver's theory. It is certainly supported by McCollum and Hoagland's experiments, in which the place of the endogenous acidosis due to starvation is taken by the acid added to the diet. In essence, and within the limits quoted, Schryver's view can, I think, hardly fail to be true. I think, too, that the phenomena upon which it is based explain, partially at any rate, the necessity of carbohydrate for protein equilibrium, and very likely bear upon experiments which seem to show that ammonium salts can act as protein sparers.

In parenthesis I would point out that McCollum and Hoagland's experiments, and incidentally the theoretical views of Schryver, bear also upon the question I have just discussed, the effects, namely, of acids and alkalies upon the total grade of metabolism. The former we have seen depress, while the latter increase, oxidative processes. The reverse is the case with respect to the excretion of nitrogen. McCollum and Hoagland got the lowest possible endogenous nitrogen excretion when alkalies were added to the starch ration, and the highest when acids were added. This is merely further proof of facts with which we are familiar. The excretion of nitrogen is dissociated from the main oxidation of metabolism. The elimination of the nitrogen from the free amino-acids of protein proceeds promptly and independently, even when the main supply of energy contained in these amino bodies is not being liberated but stored up. We have just seen that mineral acids, because they liberate the amino-acids, increase the nitrogen output, even though they depress metabolism as a whole. With alkalies the phenomena are reversed.

RELATION BETWEEN THE BLOOD AND TISSUES.

Returning now to the relation between the blood and tissues it is interesting to note that Barcroft found that the acidosis due to starvation—at any rate, that due to a brief period of starvation—left the blood mesectic; in one case as studied it became indeed pleionectic; that is to say, the hydrogen ion concentration was normal or even lowered. Now to some extent the respiratory centre was responsible for this adjustment, as the CO_2 tension in the blood was lowered; but the centre could not adjust to the larger acidosis of continued starvation. We have seen that the supply of ammonia becomes all-important here. But we know that the circulation of β-oxybutyric acid and aceto-acetic acid also involves loss of fixed bases. It is significant that in starvation the loss is chiefly of potassium from the cells; the blood retains its sodium with avidity. The protection which the tissues obtain from the ammonia production is therefore not complete. They make a sacrifice of bases in order to keep the blood so long as possible normal in reaction. Just as we find with regard to osmotic properties that it is only the blood, and not the tissue-cell, that retains under all circumstances a nice adjustment to a mean value, so it is only the blood which tends under stress to maintain the mean value of its chemical reaction. Since the properties of the blood can only be of importance in so far as they relate to the needs of the tissues these familiar relations are somewhat puzzling. Perhaps we may conclude that, just as the less active tissues are, in starvation, sacrificed to supply energy to the more active tissues, so tissues less sensitive to changes in hydrogen ion concentration are sacrificed to those which, like the cells of the medulla, are hypersensitive. But the hypersensitiveness of these is essential to the body as a whole and the adjustment is an expression of the solidarity of the animal. At any rate, it is almost certain that the average H ion concentration of the tissues as a whole must increase in such conditions as starvation, though we have no quantitative data, I think, with regard to it. There are abundant checks to extreme change, as we are to see; but temporary and local changes are continually occurring during normal life. They are, indeed, an essential factor in the activities of tissues. As examples of extreme cases we have only to think of what is involved in the secretion of strongly acid and alkaline fluids by the gland cells; but changes of some degree are much more universal.

LACTIC ACID PRODUCTION IN MUSCLE.

It is necessary that I should now deal a little further with chemical mechanisms which regulate reactions within the tissue cells themselves. In 1907 W. M. Fletcher and I investigated the conditions of lactic acid production in muscle. The work we did was called for at the time because, old as was the interest of lactic acid in physiology, its significance had been obscured by faulty observations. It had even been asserted that there was no increase in the lactic acid of muscle even as the result of stimulation or rigor. We were able to correct this statement by demonstrating that the extreme sensitiveness of the acid-producing processes to the stimulus of injury had led to gross overestimation of the amount in resting muscle. The acid estimated in this had been largely produced by the manipulations of the analyst. We studied, so far as we could, the rate of production of acid under various conditions. We were able to show also that an efficient supply of oxygen to the muscle caused a disappearance of lactic acid *in situ*. This had not received experimental demonstration before. But we produced some evidence to suggest that this removal does not imply actual oxidation of the lactic acid, but rather the restoration of some complex from which it originally arises. A reversal of a reaction under the influence of oxygen seems involved. We know nothing yet of chemical details in connexion with this, but the later thermodynamic studies of A. V. Hill seem fully to confirm the fact in its essentials. "The lactic acid," says Hill, "is part of the machine, not part of the fuel." It may be the product of a change which yields energy for the contraction of the muscle—a change not involving oxidation. But I conceive of the chemical mechanism which produces it as having also a somewhat different function. A very low concentration of lactic acid (in other organs as well as in the muscle) may be normal, even when the cell or fibre is resting, but an increase is always imminent. The explosion which produces it is, as it were, under the influence of a hair trigger, always cocked. A small relative failure of oxygen supply such as momentary vaso-motor constriction might induce, a small change in the permeability of membranes within the cell—if these or certain other events happen an increase of lactic acid, to some degree or other, follows promptly. On the other hand, such concentrations as I am thinking of may disappear rapidly with restoration of oxygen-supply or as the result of other reversals in conditions. But the shift of H ion concentration which the appearance or disappearance of the acid

involves brings other events in its train. Rightly or wrongly, I look upon the lactic acid mechanism as an important regulator in the tissues, not only of "reaction," but of *reactions*.

With regard to muscle in particular, Mines[12] has even ventured to formulate as a possibility the view (which had been vaguely perhaps in the minds of many of us) that a very localised production of lactic acid in the fibre, at high concentration, is the direct cause of muscular contraction. He points out that there is experimental evidence to show that "the application of an acid to a colloidal system of particular disposition of parts may give rise to a large production of mechanical energy." Mines induces striking arguments in support of this view.

ADJUSTMENT OF REACTION IN THE TISSUES.

It is important in any case to remember that adjustments of reaction, whether towards the acid or alkaline side, may occur in the tissues depending entirely upon organic reactions catalysed by ferments. There is little doubt, as we know from the work of Dakin, confirmed by that of Neuberg, that lactic acid arises in the tissues (though probably not in muscle) from a substance, methyl-glyoxal, $CH_3.CO.COH$, which may itself take origin from sugar or from the amino-acid alanine, CH_3CHNH_2COOH. Dakin points out that in these chemical relations we have a mechanism making for the maintenance of approximate neutrality in living cells. Alanine may be converted into "neutral" methyl-glyoxal with liberation of alkaline ammonia, while the methyl-glyoxal in turn may be converted into acid lactic acid by union with water; but the former process is inhibited by an alkaline reaction and the latter by an acid. "Thus it is clear," writes Dakin, "we are dealing with an exquisitely delicately adjusted condition of equilibrium provided with automatic checks guarding against undue development of either acid or alkali." Neuberg, again, has shown that tissue ferments can convert the neutral sodium salts of the keto acids, which we know occur in the course of metabolism, into aldehydes and alkaline sodium carbonate, e.g.:—

$$CH_3.CO.COONa + H_2O \rightarrow CH_3COH + NaHCO_3.$$

Ferment reactions can, therefore, produce a change in the direction either of acidity or alkalinity. We see that the powers of adjustment of reaction within the cell are great, even as a result of metabolic processes alone.

Do not think that all this time I have been too far off my main theme. Local changes in the cells of an organ are followed by local changes in the blood within the organ, and these, so far as they involve changes of reaction, have important results for the organ itself. An increased activity in the organ calls for an increased supply of oxygen. We know that this is met by a local vaso-dilation which results in the transport of more blood to the cells. So far as the dilation is something more than the relaxation of previous constriction it has been customary to ascribe it to the action of dilator nerve impulses. But is it? Barcroft in a very admirable chapter in the book[13] which I have already quoted so much has marshalled strong arguments, largely based on his own work or that of his colleagues, to show that it is rather due to the addition of metabolites to the blood. Many years ago Gaskell, confirming some earlier observations of Severini, showed that very dilute lactic acid dilates the capillaries. Bayliss in 1901 showed that carbonic acid has the same effect. The dilatation is a hydrogen ion effect, not due to a specific acid. Barcroft's full presentation of the evidence, which I must not stop to give you, leaves us with no doubt that the addition of acid metabolites to the blood plays a predominant part in the normal dilation which accompanies activity. However rapidly its reaction may subsequently be adjusted, the venous blood leaving an active organ is definitely more acid than the arterial supply. Since a full supply of oxygen diminishes acid production, there is clearly an automatic adjustment possible. The beginning of activity we may picture as raising the acidity slightly, first in the cell and then in the capillary. The consequent vascular dilation provides more oxygen, and so checks the further development of acidity. Here, then, we have a very definite instance of an important effect following on a local change in the reaction on the blood.

RHYTHM OF HEART.—PRODUCTION OF ŒDEMA.

My subject as one surveys it seems almost co-extensive with the whole of physiology. But I must hasten to a close, and will deal only very briefly with two other local phenomena. Various workers, and especially G. R. Mines and his colleague, Miss Dale, have shown how great is the importance of the reaction of the fluid which perfuses the heart in connexion with the origination and maintenance of rhythm. The different chambers respond somewhat differently to changes of hydrogen ion concentration, and if this factor be varied sufficiently, considerable dislocations in the beat may occur. The variations studied experimentally during artificial perfusion are much too large for any such to occur in the normal circulation, but local variations may be more extensive, and we must remember, in any such connexion, that abnormalities of less degree may, if long continued, produce results of significance.

Lastly, I will mention a much discussed theory in which great importance is attached to a local rise in hydrogen ion concentration whether in the tissues or the blood. I mean the theory of œdema advanced by Martin Fischer. If a frog's limb be ligatured and the animal allowed to remain in water, œdema develops with some rapidity below the ligature. It does not appear if the frog remains out of the water, so that it is clearly not due to blood pressure changes in the limb itself. The tissues below the ligature, unlike the tissues when normal, attract water from the outside. Now a considerable number of colloidal substances, fibrin and gelatin for instance, which tend to attract water and swell up as a result of absorbing it, do so with increased rapidity and to an increased degree when certain concentrations of acid are present. Martin Fischer's view is that these two phenomena are essentially the same. The tissues of the ligatured limb develop lactic acid because they are deprived of oxygen; this increase of acidity greatly increases their affinity for water and œdema is the result. The swelling is essentially due to a physico-chemical property of a colloidal system, and there is from Fischer's standpoint no occasion to go beyond or behind this property in seeking for an explanation in any case of œdema whatever. Needless to say, in the presentation of the theory other evidence is advanced; but nevertheless the swelling of the ligatured frog's limb remains

[12] Journal of Physiology, 46, 12, 1913.
[13] The Respiratory Function of the Blood, Cambridge University Press, 1914.

the *experimentum crucis* on which it is based. As you are doubtless aware the theory has been criticised by many authors whom I must not stop to quote. I think you will agree that its teaching is too purely mechanical or, rather, too superficial. It leaves out of account the many subtleties involved when a living tissue responds to any kind of change. In the endeavour to avoid all that is mystical and to give us something objective it probably excludes factors of real importance. But the phenomena upon which it is based are certainly not without significance, and the theory has some advantages over others that have held the field. No one I think who has worked, say, with the isolated and artificially perfused mammalian heart, and has watched it grow œdematous while still beating, the degree of œdema—seemingly at least—depending upon the degree of acidity which has developed, can wholly ignore Fischer's views. Local acidity would seem undoubtedly to favour the occurrence of œdema, at least in some tissues; but we do not know what is the relative importance of the part it plays.

SUMMARY.

Before concluding, I may attempt a brief summary of the facts and considerations which I have put before you. The hydrogen ion concentration of the blood is a variable, but the interests of the body demand that its variations should be confined within a very narrow zone of change. In the maintenance of its mean value, which is such as to make the blood a very nearly neutral fluid, a great number of factors play a part—some chemical, some physico-chemical, and others more purely physiological. When appreciable variations occur they produce striking effects, especially upon the mechanisms of respiration. Considerable departures from the normal indeed can only exist when the sensitivity of the respiratory centre is simultaneously modified. In the tissues—at any rate, in certain tissues—wider variations in the hydrogen ion concentration probably occur; but metabolic processes are nicely adjusted to the maintenance of approximate neutrality even in the tissues themselves. Any local change of reaction when it occurs may profoundly affect the general chemical equilibrium in a tissue or organ.

It is remarkable that the acidosis produced by such factors as are involved in taking exercise at high altitudes should induce more change in the actual reaction of the blood than the severer forms of acidosis occurring in a disease like diabetes. Doubtless the more gradual establishment of the acidosis favours a more complete adjustment. We have very definite evidence that variations of reaction may occur in disease and be responsible for certain symptoms, but the whole question of the range of variation in pathological states and the effects correlated with it remains for further study by modern accurate methods. I may conclude with another appropriate quotation from the address given by Dr. William Sharpey in 1862. He said: "But one of the most significant steps that have been made in modern physiology is in my judgment the general recognition of the importance of exact numerical determination, whether as to time, space, or quantity, and its general application to those phenomena of the body which are susceptible of it." Our progress depends upon the continued recognition of this importance, and fortunately we are always finding fresh phenomena which prove susceptible of quantitative study. With some of these I have been dealing.

A PLEA FOR THE DEGENERATE.[1]

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THE conferences of eugenists which are held from time to time have for one of their aims the procurement of a Utopia of physical excellence and ability, and Parliament has adopted a Bill for the segregation of those members of the community whose continuance in it as free agents is considered adverse to the well-being and prosperity of the race and antagonistic to the transmission of a healthy offspring.

The eugenists appear to have had it all their own way, but there is still something to be said for the very large class of slightly degenerate, and many will agree that in the desire to make a nation of sane and healthy people the eugenists overlook or under-estimate the curative power of nature, whilst they advocate measures some of which are unnecessary and others intolerable. Their enthusiasm blinds them to the defects of even the best educated and most intelligent people, whilst it incites them to crush out a most useful and harmless section of the population, even if it be in some respects "degenerate"—whatever may be the limits of that debatable term. For no one could rightly maintain that grades of intelligence are not a necessity or that a socialistic Hygeiopolis, where all are equal in mental and bodily development, is either desirable or possible.

In the ultra-impaired and degenerate, such as epileptics, idiots, and the lower imbeciles, it is no doubt absolutely necessary to condemn their contribution to the perpetuation of the race, and the best way of doing this is by legal restraint until extermination eventuates; but it is a doubtfully wise proceeding to limit marriage to those who are able to produce a medical certificate of validity, for one reason because we cannot always detect latent disease, and for another because our views on hereditary transmission are still in the crucible, and biometrical science is mostly in the apophthegmic stage—a matter of terse sayings of limited range. To argue that the safeguards of marriage should be tightened so as to produce only healthy stock is one thing, but to sacrifice everything to the development of educated intelligence is quite another thing, and there are plenty of proofs that the comfort and even the safety of social conditions may be violently upset by suppressed or loosened emotional storms which are just as much the accompaniment of "higher" intellectual states as they are of the "lower," if indeed they are not more intense and compelling in the former than they are in the latter. There are plenty of intelligent and educated women among the militant suffragettes, but that fact does not prevent them from breaking the law nor from establishing the dread of unexpected and impulsive violent actions engendered by bad logic and a state of monoideism.

The education of the lower orders has not tended to the peace of social systems; indeed, it is probable that in many directions it has substituted for a beneficent oppression the tyranny of agitators and the subtle influence of a systematised organisation for the accomplishment of ends sometimes unworthy.

It will be observed that those who advocate the

[1] A paper read before the Harveian Society on April 2nd, 1914

advanced views of eugenists are mostly scientists, not physicians; they want all to be perfect and all approximately intelligent, a condition which would be as dazzling as living in perpetual sunshine with no respite of dawn, twilight, or darkness. Too much must not be expected quickly from education; and discomfort must accompany its spread. An educated monkey or a tamed lion never loses his innate destructiveness; he just learns how to become a more accomplished nuisance. When the Education Bill was passed in this country the Kaiser William said that it was "the beginning of the downfall of England," and however this statement may be traversed there still remains the truth that upheavals and discontent have been the accompaniments—perhaps the necessary accompaniments—of the process. The early promoters of the general and forced education of the masses probably knew this very well, and never for a moment thought that the feeding with the fruit of the tree of knowledge would have any other result than the upheaval of settled social systems—it has, indeed, been cataclysmic, bringing about a bloodless revolution and upheaval in many of the organised strata of our social system.

When the eugenists have had their way, and when disease is no more and degeneration a thing of the past, what a world of strife it will be. There will be no peace and quietness; no one to do the drudgery. As it is, the majority of people are commonplace, perhaps rather stupid, or, at any rate, not brilliant, and this wholesome leavening with mediocrity makes for the easy routine work which is of such advantage for the smooth working of the cosmic economy. To carry on the work of the world we do not want everyone to be a model of ability and excellence of structure; we require a certain number who will do as they are told, and who, as long as the conditions under which they live are humane and well-ordered, delight in the beneficent compulsion of authority, direction and guidance, and seek for nothing better. When a long-established order or arrangement is upset, and what was below is placed on the top, a new crushing force of unknown extent and intensity is developed, a power which has no experience of its new and unaccustomed existence, which in its spasmodic writhings to accommodate the environment to itself is pretty sure to make mistakes, because it tries to adjust in a day what has taken years of gradual subsidence to consolidate. And this subversion must occur when the forces of nature are interfered with by such drastic remedies as the eugenists propound—viz., the unsexing or the destruction of all degenerates and the artificial cultivation of general excellence. In the organic kingdom there is no such thing as equality, but a graduated system of complexity and excellence can be detected all through its hidden recesses and in its open manifestations, whilst in the lower developments are found a peculiar adaptability and usefulness which could not be got from the more elaborated members of the family, do not, indeed, lie within their functioning capacity.

Heredity is in many respects a blessing. If owing to it we have the transmission of tendencies of an advantageous kind it saves time and work, because it gives the individual a flying start and lessens the trouble of acquisition and of preliminary training, and, notwithstanding all the difficulties nowadays set up to the doctrines of the hereditary transmission of disease and of undesirable qualities, there must be many believers in it, else why do the eugenists go to such extreme measures for exterminating the poor specimens which, if it were not for their power of hereditary transmission, should be treated as accidental occurrences with a very limited range of ability for doing evil?

The greatest hereditary transmission is death—there is no doubt about that—and probably disease is the next. The eugenists take refuge for their measures under the plea of civilisation, but their practice is, after all, but a return to savage methods which are drastic and, as they think, beneficial to the social system, relieving it from what is irksome to it. For what is the tendency of our modern civilisation? It is really little more than the *toleration of abuses*. We let off murderers in deference to public sentiment, and we never carry out the extreme sentence on women because we are more "civilised." We treat crime as a disease and deal with it mildly. We suffer fools gladly and take the most beneficent care of them. We endure all sorts of inconvenience at the hands of strikers and allow violent coercion to proceed very largely unchecked because the "high civilisation" suggests toleration and not repression.

There are two chief classes in civilised communities: those who find the form and means for work and those who use these, and in the latter we want bodily fitness and a certain amount—not too much—of intelligence. It is quite right to do what we can to ensure the former, and if the eugenists confine their efforts to hygiene they will be working all for good; but to go to the extremes advocated by some of their members in their desire to adopt a high standard of intelligence is unnecessary, because nature steps in and provides for the early and efficient elimination of the extreme forms of degeneration by disease and death. We may assist nature by placing under lock and key every "degenerate" in the country; but it would only be a respite, the condition would soon reassert itself, because however we try to eliminate it the measures cannot touch the elements which are present in many of the lives which would be passed by the eugenists as sound, though they may only declare their existence too late and when the damage by transmission has been effected.

As for the intermediate forms and degrees, we turn them into staple commodity; they provide us with occupation for builders, architects, and governing bodies, besides an array of doctors, nurses, and attendants. If all the by-products of civilisation were cleared away there would be no scavenging to be done, and the large proportion of medium-brained toilers would be without occupation. Instead of exterminating a class which does not rise in some few particulars to the intellectual level desired by those who think they can secure breeding on fixed principles, it might be deemed more conducive to the peace and contentment of the world if some of the very "clever" people were deleted, for their criticisms of the social scheme are so much more "clever" than their suggestions for remedy. The drawback of making people in humble circumstances develop aspirations for which they are quite unfitted is that whilst the inferior occupations remain as necessary as ever the people who should carry them on become fewer—they relegate them to the recidivists instead of leaving them in the hands of those who, by their very mediocrity, provide a most important link in the social system. From their mediocrity the best of them would regularly and steadily emerge according to biological rule. If there are some

members of the population who can do the work which others will not do, it may be, and I think is, the duty of the governing body to protect them; it is certainly wrong to exterminate them because they form part of a natural system which is composed of graduated elements of perfection, and which is as useless without these lower but subsidiary members as is a house without a kitchen or a reptile with its tail chopped off.

No doubt it is better to stop bad and dangerous breeding than to sequestrate and try to extirpate the results of it, but is it possible to adopt the former course? Not in the transition stage in which we now are, and inasmuch as we can never hope to attain to a fixed and final perfection it is impossible to see how care in breeding can be more than palliative. If every palpable degenerate of the moment were obliterated the supply would still go on. There are now going about with full approval as to their gametic validity all sorts of swindlers, drinkers, dishonourables, pleasure-seekers, lazybones, gossips and slanderers, men and women physically fit to perpetuate their species and who cannot in this particular be denied, but who are morally and intellectually distinctly unfit because there is ground for belief that these defects may be ontogenetic and capable of influencing progeny; indeed, this ground for belief becomes a certainty if we remember that many mental characteristics are the necessary results of certain bodily processes, and are in their sphere only another form of them. There are numbers of people in prominent places for which they are absolutely unfitted, they have been foisted upon leadership by patronage, or by family descent, or by fortuitous circumstances, and when they are in leading positions the evil they do is enormous. There is no guarantee that one who has played a leading rôle in any of the subdivisions of the life-drama is fit to have descendants; because some of even the most distinguished self-made or hereditarily marked people are so pervaded by hidden defects that they are unfit to generate, lest the weeds appear and thrive upon the good soil with which they are simultaneously projected; on the other hand, it would not be difficult to prove that a not wholly corrupt tree may bring forth good fruit.

There is often raised the cry "Where is the man?" And when he is found it is not by looking among pedigree stock—people who have had notable ancestors, but by waiting until the right person "arrives," often an unknown growth from some dark, neglected, and unsuspected corner, the spawn of which has the latent endowments which the new environment seizes upon and nourishes to its own advancement. There never occurs a crisis without its hero of the moment—it may be a woman, as the Pucelle d'Orléans, or it may be a diminutive degenerate, as was the ferocious Swiss hairdresser, the thief, the creature of hæmothymia, the infamous Marat. Now Marat was probably a degenerate, at any rate a bodily degenerate, and the eugenists might say, "Such a person would be impossible if our suggestions were acted upon, and therefore you would never have had such a bodily or mental degenerate"; but cruel and bloodthirsty as Marat was, he was yet the man of the moment, and he may have been useful by bringing about the satiety of revenge which was the turning-point in the tone of the environment, and led to a change of atmosphere demanding a different set of agents. For, after all, it is not invariable that men set up an environment; as often as not circumstances arise which require men suited to the work to be done, and so the "man of the moment" may be wicked, unscrupulous, immoral, and degenerate from the standard of mental desirableness, but his very vices qualify him for the prominence which, evil though it may seem at the time, may be the necessary prelude to a blessing. The history of human nature is that of a condition of unstable equilibrium—at one time the good factor, at another the bad element in the ascendant; but inasmuch as "good" and "bad" are relative terms it is of no use to legislate for a special class to the exclusion of others, because that favoured class may turn out to be the one undesirable and invalid at the moment. The distorted body may have a most excellent and beneficent mind, whilst an Apollo or a Hebe may be of a devilish intellect, and the system which would exterminate the one and perpetuate the other cannot be founded on right principles. The Marchioness of Brinvilliers and Beatrice Cenci would have been champion stock for the eugenists.

In one of his aphorisms Wundt says that "men think very little and very seldom." The truth of this dictum is indisputable, and it has much to do with the point we are discussing. Herbert Spencer walked about London notebook in hand, listening to and writing down the matter of the conversation of passers-by. He found it to be of the most ordinary character, chiefly personal, such as "And how was Jemmy when you left him?" or, "She never gives more than tenpence a yard for it," &c. And action, like thought, is often of the simplest kind; however difficult at first to acquire it has become an easy and self-sustaining reflex. When active thought or energy of a new kind is carried on for a long time or under stress people break down under it; the work can be done for only short periods. It is the custom to point to the great age to which scientific and other very busy men live; but when they do it is because they have as a rule an occupation which they are fitted to carry on without strain. That people cannot bear strain for long is shown by the desire for filling up positions of responsibility and activity by young men, the idea being that new work requires young material.

Though people are enabled, through the progress of hygiene, medicine, and surgery, to live longer, their active and altruistic sphere is cut short, and just when their energies and experience are at the best they have to give place to younger men. What is left for them to do? In many instances nothing. Do you suppose that the men who lounge about clubs and spend the day on golf links or croquet grounds are doing what they prefer? Not a bit of it. They are just getting through time in the easiest way, whilst many are inwardly fretting at their enforced idleness. Though placed *hors de combat* they are still of some use to the community—they pay taxes, and in amusing themselves may contribute to the gaiety of nations, but except as mere units they are of little account, and the world tolerates them as long as they are harmless; but in rendering this scant recognition the world is unjust, for by their very inactivity they leaven the surging restlessness of the crowd, and act as buffers which deaden the shocks of the to-and-fro hustling of conflicting interests—they are then most useful in their enforced leisure; they cannot be called "degenerate," and they have a serviceable rôle as honorary members of the social system. When a man reaches 80 years of age—still more

100—he may carry his own proof that he has led a fairly moderate life, but at the same time he indicates that it has not been too strenuous.

Some forms of disease are so manifestly incapacitating that no doubt can be held as to the necessity of isolating them; such are violent epileptics and advanced imbeciles and idiots. But the rule must not be made too hard and fast, and I could give instances of families where epilepsy in the parent has had no effect at all upon the children, and of high-grade imbeciles whose children are sound and bright. On the other hand, who is not at a loss at times to account for the deviation from moral rectitude, the actual mental breakdowns, the ineptitude of many whose pedigree chart seems unexceptionable? If we look at the manual and mental work done in large institutions, such as asylums and workhouses, we see that much is accomplished by degenerates, and that the best done part, too. Occasionally the quarrelsome and troublesome person is given employment to keep him quiet and to interest him, but the cleaning, the carrying, the heavy drudgery, is by preference given to the degenerates—the epileptic, the imbecile, and the idiotic—and very well it is, as a rule, done. The working expenses of institutions would be vastly increased were it not for these degenerate toilers. And so it is in the outside world. I doubt if ordinary society could be carried on without the aid of the mediocrity, the patient force which has only to keep in motion the body which has been swung into the sphere of activity by the superior mind. Just as small coinage has its advantages, so we should find the conduction of social necessities too expensive if confined to the regenerate. The eugenists want to do away with the pence and farthings, and to substitute a more showy and expensive medium which cannot do the work of its lower congener except at the price of waste and inconvenience.

To some extent the cult of eugenics has actually been a going concern for some time in an incomplete and imperfect degree, but still in action. For years thousands of insane and degenerate people have been kept in asylums, workhouses, and prisons. It will be said that many of these have been from time to time allowed to return home and to go on increasing their families, and that it would not be prudent to draw too definite conclusions from the partial enforcement of these repressive measures; but it is interesting to look round and see whether there is any tendency to improvement in social conditions since repressive measures (however imperfectly administered) have been in force. Is the law any better obeyed than it formerly was? There seems to be a rising feeling that if the law as it stands does not accord with what the "educated" mass of the people think best for its individual advantage, therefore it (the law) must be resisted until it is changed to suit their own wishes, regardless of the effect of the change on other classes of the community, the result being numerous class wars, because altruism becomes sacrificed to selfishness. It seems to be more and more unlikely that those who find the present condition fairly satisfactory will quietly submit to have it subverted; they will not consent to anarchy as the succedaneum for even an imperfect law without a struggle. "No," they say, "your proposition is a revolution, and that we will not accept unless you are able to bring superior force and establish it yourselves." When once it is seen that the revolution is successful there is sure to be a repetition of it until the social system settles down again under the rule of those who have the power and the numbers to enforce their position.

If all vice is confined in prisons and all deformity and defect is sequestered in hospitals, asylums, and sanitary homes, if pauperism is done away with by syndicalism and trades unions, if moral and physical pain are to be banished by the panaceas of faddists—if, in fact, a new world is to be regenerated by esoteric philosophy—then we must be prepared to see a change in those mental elements which at present are viewed as the traits in us of descent from a Divine origin. Altruism and pity will die a natural death, because there will be no one requiring self-abnegation and commiseration—where all are strong there will arise an inability to understand weakness. The idea (as a working hypothesis) that mental deformity is dependent on bodily impairment, and the converse, that physical integrity connotes mental adequacy, or even perfection, is not based on unprejudiced experience. The giant in strength and in grace of form is liable to abuse both; he thinks that nothing can resist him, and so he proceeds to over-functioning and to super-induced decay, whilst the weakling learns to husband what strength he has and is careful not to incur the risks of contradiction from others.

The experience from America, where in some places eugenist marriage theories have been in force, is not very favourable; the medical certificates have proved very expensive and inadequate, and people have evaded the law by quitting the State and disregarding medical impediments. It is not logic to say that because a theory is useful in its application for some cases it is therefore necessary to make it universal; because, to have this effect, the theory must be perfect. Is the theory perfect? This can surely not be upheld even by its most strenuous supporters. It is true that when disease or imperfection is markedly in evidence so that all are agreed on its existence in the individual case under observation, the enforcement of the theory may reasonably be upheld, and so there can be no doubt that the marriage of freaks, epileptics, of imbeciles and idiots, of syphilitics, and, perhaps, of the tuberculous, ought to be forbidden; but inasmuch as it is probable that an absolutely healthy person is not to be found, and that it may hence be concluded that the majority have in their organism the latent germ of disease, it is evident that the universal application of eugenics cannot be tolerated—that therefore it would be unjust to tabulate any compulsory laws to be of universal application. Indeed, in many countries everything which tends to support the ideas of eugenism is deliberately traversed. Take Germany, for instance, where among the nobility it is absolutely taboo to marry anyone who is not *hof-fähig*, which, of course, means ostracism from society functions. Royal families, where one would think that the highest physical and mental qualities were desired, are very limited in the choice of marriage possibilities, so that it often happens that consanguinity of a fairly close degree is necessitated, and this is directly opposed to eugenic theories, though it does not always in practice eventuate badly. In this country *Hoffähigkeit* is not an inexorable law, and the aristocracy of wealth fuses readily with the aristocracy of birth—nay, more, the platforms of the marriage market have become so extended that mere good looks combined with respectability and

intellectual competence are almost as good a passport to the aristocracy of birth as is that of wealth alone, all of which may be of eugenic trend and therefore desirable. That morganatic marriages were not always successful in producing the best stock, whilst very often marriages between people of the same social standing turn out extremely well, shows that it is not necessary to break down class laws by eugenic theories. It is quite fortuitous whether the result is good or bad—fortuitous, that is, as far as the matter of personal selection is concerned, though not fortuitous, but necessary, if we only knew the laws of ontology.

The brainy person is driven forward to continual striving and knows no rest, and if, as is not infrequent, his braininess is joined on to a weak bodily accompaniment, his life is a continual effort, a war against discomfort; if, notwithstanding this personal bodily degeneracy, he is yet able to add to the progress of the race, well and good—let him live and raise offspring if he desires, for though eugenically unfit he may produce a fairly healthy stock, which, brought up in a healthy intellectual atmosphere, may, though not perhaps most desirable from the physical point of view, be of use to his social environment.

The man of first-rate physique is not always proportionately endowed intellectually, and he, too, is wanted and called upon to energise to an excess which is not good for him. His very strength tempts him to despise moderation, and before long he is landed in difficulties which the more moderately endowed person never feels, and so the strong man ceases at an early stage to be a practical asset. Which is the better for a nation? To have good physique and moderate, unsensational brain development, or to have extraordinary intellect and poor or indifferent bodily quality? The eugenists will say that they want both body *and* brains, and though it is true that now and then we do find these eclectic phenomena they are yet too rare to rest hopes upon; as a rule one of the two is commonplace, and the most useful social stock combination would seem to be the sound body with the medium mind, for such a man makes the best citizen: he can fight for his country; he can add his quota to the population; he is honest and not so brainy as to become a dissatisfied theorist; he may, indeed, be of such moderate mental capacity that, compared with his bodily standard, he is inferior and may be classed as degenerate, but he is able to get his living and remains a valuable potentiality even though he does not attain a theoretical adequacy. We judge, after all, by results, and however much a person fails to realise an ideal we put up with the theoretical inferiority and prefer inertia to inconvenient dynamics.

The above was written before I read a speech recently made by Sir J. Crichton-Browne at a dinner of the Sanitary Inspectors' Association, and I am very glad to find my views in harmony with so distinguished a rhetorician. I beg to quote that part of Sir James's speech which suits my purpose. He says, talking about not prolonging the lives of the unfit, that "it would emphatically *not* be better to let some of them die out. Sanitary improvement did not run counter to natural selection; it did keep weaklings alive, and weaklings often turned out to be the benefactors of the species. Slum-life was a widely destructive process; it favoured the survival of those who could subsist on a relatively small amount of nourishment and light and air."

The object of this paper is to remind us that there is now in actual force the Mental Deficiency Act of 1913 which gives ample opportunity for placing under restraint defectives of very different degrees of intensity, from the very strongly pronounced idiot and imbecile to the "moral imbecile" or the person "who from an early age displays some permanent mental defect coupled with strong vicious propensities on which punishment has had little or no deterrent effect." This clause is very vague and I doubt if it will really help much, for the phrase "some permanent mental defect" may be exceedingly difficult to put down on paper, and the whole clause implies that punishment has been tried and has failed. The really troublesome people are often those whom the law seems unable to touch, especially when alcoholism enters into the question. I saw recently a gentleman, married and with a healthy family, who is really morally imbecile and whom his friends would wish to have certified, but no medical man will take the risk of doing it. He is a graduate of a university, a distinguished athlete, and free from delusions or any mental flaw which would pass current as insanity; and yet he is a habitual drunkard, easily imposed upon by designing persons, and would be with advantage restrained—but there would be great difficulty in doing this—nothing but a *conseil de famille* could effect it. On the other hand, we all know of people who are of low intellectual standard but morally are correct; these are the people whom the law *would* enable us to sequestrate, and it is just these whom, for many reasons, it is not (as I have tried to show) desirable to remove out of the community.

It almost looks as if intelligence and morality were two distinct things, and that it is safer to have intelligence than morality; a person who has the former may get off scot-free, but to him of weak intelligence his morality is of little avail when it suits the purpose of those who have the power of sequestrating him to use it. It is against the abuse of this facility that I have ventured to address you.

Weymouth-street, W.

THE AERIAL CONVEYANCE OF INFECTION.

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THERE has been, and still is, very considerable difference of opinion as to the conveyance of infection by air, and while on the whole it is conceded generally that the air is not the chief vehicle for the conveyance of infectious diseases, there exists amongst the most competent observers considerable doubt as to what part the air plays in this conveyance, and certainly there has been great exaggeration in the past. Yet it appears desirable to accept views not based on sound observation with caution.

For the past five or six years we have held the view that conveyance of scarlet fever by air is improbable, but we were not courageous enough to put our view to the test, except in a limited way, until the work conducted by Dr. Claude Rundle and

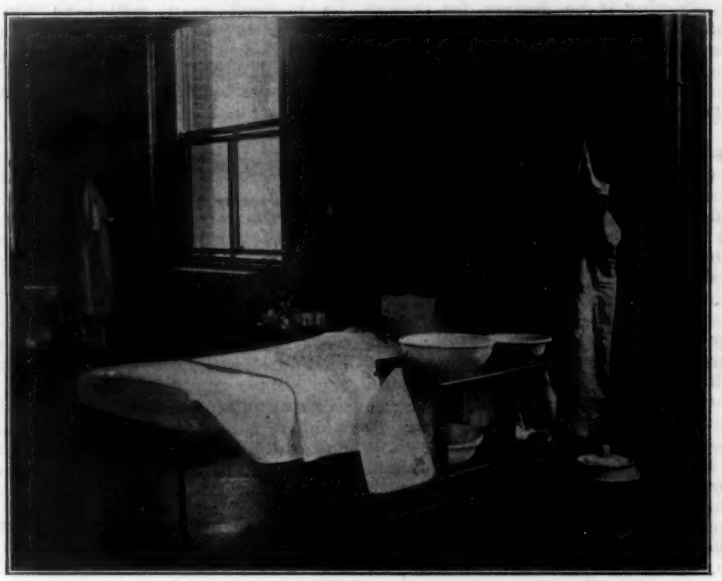
Dr. A. H. G. Burton at the Fazakerley Hospital[1] became known to us.

Early in 1912 we decided to make an attempt to increase our knowledge on this subject and to treat certain infectious diseases in an ordinary ward with the precautions of cloak-wearing, cleanliness, and sterilisation. This work has nothing to do with cubicle and box ward work which has been conducted at this hospital for a number of years, the first box ward having been opened on June 15th, 1904, and the first cubicle ward on Sept. 6th, 1905, these being, as far as we are aware, the first box and cubicle wards to be put into use in this country. At the commencement we decided that, with the exception of measles, we would place in the ward sufferers from the infectious diseases ordinarily admitted to or arising in the hospital, and we did not contemplate treating measles in the ward, at all events until we had satisfied ourselves that chicken-pox was not aerially conveyed. We failed to satisfy ourselves on that point, and we therefore continued to exclude measles and modified our action as to chicken-pox.

The ward in which we conducted the work is a modern one for 12 patients, well lighted, well ventilated, and having 195 feet floor space and 15 feet wall space for each patient. We endeavoured to avoid infection being carried from one individual to another by every means in our power and within our knowledge. Feeding and other utensils, textile goods, instruments for treatment, and so on, were either reserved for the individual or sterilised before use. For example, a penholder was kept on each patient's locker in order that it might not be a means of infecting the medical or other officers' fingers. Pedal spray basins for washing were desirable, but we did not feel justified in asking the managers to provide these, since the work was after all an experiment; accordingly we used ordinary washhand basins placed upon lockers at each bedside. We are well aware that it would have been more satisfactory to wash the hands in running water, and had it been available it is possible our results might have been better.

In contemplating the work we considered that since the diseases with which we proposed to deal were to all intents and purposes those of early childhood we would make a serious error if we departed materially from the age-periods at which these diseases particularly arise. Also we decided not to place adults or adolescents in beds intervening between different infectious diseases, as this in our opinion, would have rendered the experiment of much less value. On the other hand, however, the fact of a child being protected by a previous attack of a disease was made use of in the allocation of patients to beds. For example, a chicken-pox patient would be placed in a corner bed and next him would usually be a child suffering from scarlet fever but showing old scars of chicken-pox. At some future period, no doubt, we may find ourselves able to dispense with this use of a protected individual as a barrier, but naturally we must progress step by step. Further, the diseases were so located as to minimise the risk of the conveyance of infection as far as possible.

Such means of endeavouring to avoid the conveyance of infection as oiling the skin or specially treating the throat were entirely avoided, since we held no belief in their value, apart from the fact that the introduction of any such factors would lessen the value of the results. However, an exception to this occurred when the sister of the ward, without instructions from us, oiled the skin of one chicken-pox patient who was placed in the ward in the scabbing stage. She did this owing to her having read a discussion on the subject which had taken place at the Royal Society of Medicine.



Reproduction of photograph of ward, showing a bed with its equipment.

No toys, books, papers, or other such materials were allowed in the ward, and no patient was removed from his bed for any purpose during his stay in the ward. Upon entering the ward every officer who was to touch a patient, his bed, or anything connected with him, was required carefully and thoroughly to wash the hands and scrub the nails with soap and water, and then to rinse the hands and scrub the nails in 1 in 200 lysol contained in basins at each bedside, and afterwards to put on a cloak reserved at the patient's bedside. After attending to the patient the cloak was taken off and the same washing process was gone through.

We wish to emphasise the difficulty in thinking of and legislating for possible sources of indirect infection, and we would mention, as an example, an occasion on which chocolates had been given to

[1] THE LANCET, March 16th, 1912, p. 720.

some of the more convalescent children, whereupon a lively child commenced throwing his chocolates to others, his example being followed by other children before the sister could put a stop to the game. This and other matters unthought of gave us ample food for reflection; and, indeed, the combination of such unforeseen occurrences with occasional cross infections, which we could not account for, so dispirited us on several occasions that we talked of giving up the work.

Taking into consideration the detailed work necessary in the ward we decided that the nursing should be ample, and the number of nurses was as follows: for day duty, 1 sister, 2 staff nurses, and 2 probationers; for night duty, 1 staff nurse and 1 probationer or second assistant nurse. The day staff relieved themselves for time off duty, but the night staff were relieved by a nurse accustomed to the work. No alteration has been made in this staffing except that the sister for some time past has also supervised another ward of the same size for diphtheria patients.

The nurses deputed to the ward have always been specially chosen out of the best in the hospital, and we wish to express our great appreciation of the work of all of them, and particularly of sisters Miriam Williams and Helen Turner, who at different times have had charge of the ward. Without the care and enthusiasm displayed by these sisters the work would have been impossible.

For a clear understanding of our remarks the following plan showing the disposition of the beds is necessary.

We have kept a daily plan of the position of the patients with their diseases during the whole period in order that easy access to the facts concerning any given case can readily be made by anyone. Commencing Feb. 12th, 1912, 274 patients were treated during a period of two years. As some of these patients suffered from more than one disease the number of individual diseases is necessarily more, and amounted to 332.

TABLE I.—*Showing the Number of Patients Treated and the Disease from which they Suffered.*

Scarlet fever (with 3 septic cases)	75	Diphtheria and vaginal discharge	1
Scarlet fever and diphtheria (1 septic scarlet fever case)	5	Whooping-cough	31
Scarlet fever and diphtheria and varicella	1	,, and varicella	2
Scarlet fever and diphtheria and vaginal discharge	1	,, ,, rötheln	1
Scarlet fever and diphtheria and whooping-cough	1	,, ,, mumps	4
Scarlet fever and whooping-cough	3	Varicella	6
Scarlet fever and varicella	10	,, and mumps	1
,, ,, ,, mumps	4	Rötheln	4
,, ,, ,, incipient measles	1	Incipient measles	1
Scarlet fever and varicella and tinea tonsurans	2	Pneumonia	2
Scarlet fever and vaginal discharge	6	Erysipelas	1
Scarlet fever and whooping-cough and varicella	2	Tonsillitis	6
Scarlet fever and rötheln	1	Mastoiditis	1
Diphtheria	49	Faucitis	4
,, and whooping cough	3	Pyrexia	2
,, ,, mumps	2	Erythema simplex	7
		Conjunctivitis	1
		Laryngitis (non-diphtheritic)	1
		Urticaria	1
		Burns	2
		No obvious disease	29
		Total	274

TABLE II.—*Showing (separating out the combined diseases) the Number of Cases of Each Individual Disease.*

Scarlet fever	112	Vaginal discharge	8
Diphtheria	63	Tonsillitis	6
Varicella (including 6 secondary cases left in ward)	24	Mastoiditis	1
Whooping-cough (including 2 secondary cases left in ward)	47	Faucitis	4
Mumps	11	Pyrexia	2
Incipient measles	2	Erythema simplex	7
Rötheln	6	Conjunctivitis	1
Pneumonia	2	Laryngitis (non-diphtheritic)	1
Erysipelas	1	Urticaria	1
Tinea tonsurans	2	Burns	2
		No obvious disease	29
		Total	332

TABLE III.—*Days' Stay in Ward.*

Number of patients	274
Aggregate number of days spent in the ward	7568
Average number of days spent in the ward by each patient	27·62

TABLE IV.—*Age-periods.*

	Males.	Females.
Under 1 year	5	0
1–2 years	13	17
2–3 ,,	23	24
3–4 ,,	15	22
4–5 ,,	15	22
5–10 ,,	42	64
10–15 ,,	2	9
15–20 ,,	1	0
Total	116	158
	274	

TABLE V.—*Showing the Day of the Disease on which Cases were admitted to the Ward.*

Disease.	1st day.	2nd day.	3rd day.	4th day.	5th day.	6th day.	7th day.	2nd week.	3rd week.	4th week.	Over 4 weeks.	Total.
Scarlet fever	6*	9	23†	24‡	6	7	3	10	8	4	12	112
Diphtheria	0	3	4	12	4	3	7	13	5	3	9	63
Whooping-cough	3‖	1	1	6	5	0	6	11	3	1	10	47
Varicella	9§	2	4	4	2	2	1	0	0	0	0	24
Rötheln	4	2	0	0	0	0	0	0	0	0	0	6
Mumps	8	1	1	0	1	0	0	0	0	0	0	11
Measles	2	0	0	0	0	0	0	0	0	0	0	2
Total	32	18	33	46	18	12	17	34	16	8	31	265

* 1 septic. † 1 septic. ‡ 2 septic. ‖ 2 infected in ward. § 6 infected in ward.

Secondary Infections.

All secondary affections that arose are called attention to below.

1. *Scarlet fever.*—112 cases of scarlet fever, including 4 septic cases, were treated in the ward and 2 cases which were infected in the ward. In 75 cases scarlet fever existed alone, 3 being septic; while in 37 cases it existed in combination with other infectious diseases, as shown in Table I., one case being of the septic type. Of the 112 cases 78 were admitted during the first week and 34 at a later period. Two cases of secondary infection occurred, the first on Dec. 24th, 1913, and the second on Dec. 25th, 1913, practically 22½ months after the opening of the ward; one case was of the aseptic type and the other the mild form. Both cases were left in the ward. During this period of 22½ months 103 cases of scarlet fever had been treated with no case of secondary infection. At the time of infection there were 12 cases in the ward, 4 being scarlet fever and occupying Beds 2, 3, 4, and 5. The patients infected were on the opposite side of the ward in Beds 8 and 11.

With regard to the day of disease of the cases (which may have been the source of infection) at the time of infection, in Bed 2 scarlet fever was in the fifth week of the disease; in Bed 3 at the commencement of the third week; in Bed 4 in the fifth week; and in Bed 5 at the beginning of the third week.

Regarding the mode of infection the only circumstances differing from the usual were: (*a*) that a nurse who was not quite up to the work was shifted out of the ward on Dec. 19th—i.e., six days before the first case, after being in the ward for a week; and (*b*) that on Dec. 19th she was replaced by another nurse who remained until Dec. 26th. This nurse had unknown to us a septic finger which probably prevented her from washing her hands properly. This, in all probability, was the origin of the infection.

2. *Diphtheria.*—63 cases were treated, and in 49 diphtheria was the sole disease, while in 14 cases it existed in combination, as shown in Table I. 33 cases were admitted in the first week of the disease and 30 at a later period. No secondary cases occurred.

3. *Rötheln.*—Six cases of rotheln were admitted—4 on the first day of the disease and 2 on the second day. In 4 cases rotheln was the sole disease; in 1 case it existed in combination with whooping-cough and in another with scarlet fever in the convalescent stage. No secondary cases occurred.

4. *Mumps.*—10 cases were admitted from the receiving room or isolation wards and 1 from a scarlet fever ward; 8 cases were admitted on the first day of disease, 1 case was admitted on the second day, 1 on the third, and 1 on the fifth. No secondary cases occurred. The case admitted from the scarlet fever ward on the first day of mumps gave rise to four secondary cases in that particular ward.

5. *Whooping-cough.*—47 cases (including 2 infected in the ward) were treated. In 31 cases it was the sole disease; in 16 in combination. 22 cases were admitted during the first week of disease, including the 2 infected in the ward; 11 cases in the second week; and the remainder at a later period of the disease. Five cases of infection occurred: 2 cases developed whooping-cough in the ward and were kept there; the other 3 cases developed whooping-cough in cubicles to which they had been removed.

First infection.—Bed 1: The patient developed whooping-cough on May 1st, 1912. Infected April 18th or before. Two cases of whooping-cough were present in the ward at this period. Bed 11: Whooping-cough of 7 weeks' duration. Bed 12: Whooping-cough of 3 weeks' duration. There were also present 3 patients with a history of whooping-cough and 7 (including the infected case) with no history.

Second infection.—Bed 4: The patient developed whooping-cough on May 7th, 1913. Infected April 24th or before. Three cases of whooping-cough were present in the ward at the time of infection. Beds 5 and 6: Whooping-cough of 2 weeks' duration, April 24th. Bed 7: Whooping-cough of 4 weeks' duration, April 24th. There were also present 2 patients with a history of whooping-cough and 7 (including the infected case) with no history.

Third infection.—Bed 8: The patient developed whooping-cough on June 12th, 1913. Infected May 30th or before. Three cases of whooping-cough in the ward at the time of infection. Bed 5: Whooping-cough of 4 weeks' duration on May 30th. Bed 6: Whooping-cough of 6 weeks' duration on May 30th. Bed 7: Whooping-cough of 2 weeks' duration on May 30th. There were also present 2 patients with a history of whooping-cough and 5 (including the infected case) with no history.

Fourth infection.—Bed 1: The patient developed whooping-cough on June 22nd, 1913. Infected June 9th or before. Three sources of infection possible. Bed 5: Whooping-cough 6 weeks' duration on June 9th. Bed 6: Whooping-cough of 7 weeks' duration on same date. Bed 7: Whooping-cough of 4 weeks' duration, same date. There were also present 2 patients with a history of whooping-cough and 6 (including the infected case) with no history.

Fifth infection.—Bed 9: The patient developed whooping-cough on July 15th, 1913. Infected July 2nd or before. Three cases of whooping-cough in the ward at the time of infection. Bed 6: Whooping-cough of 5 weeks' duration, July 2nd. Bed 7: Whooping-cough of 4 weeks' duration, same date. Bed 8: Whooping-cough of 2 weeks' duration, same date. There were also present 1 patient with a history of whooping-cough and 7 (including the infected case) with no history.

6. *Measles.*—No case of measles was knowingly admitted into the ward, but 2 cases admitted for other diseases were incubating measles. They were removed from the ward as soon as recognised. From the first case 5 secondary cases resulted, and from the second case 2 secondary cases.

First case.—The patient, occupying Bed 3, admitted on July 11th, 1912, developed a prodromal measles rash and Koplik spots on July 21st and was at once removed from the ward, which contained at that time 11 other patients, 4 being protected in so far as they had a history of previous measles, and 7 being unprotected. (*a*) Five secondary cases resulted in Beds 1, 5, 8, 10, and 12; 4 developing in the ward and 1 (Bed 10) developing at home, having been discharged. These 4 cases were immediately removed from the ward on the first signs of measles, thus 2 unprotected cases escaped infection. (*b*) One of these cases (Bed 2) developed measles as a tertiary case; the other, who had been discharged, was a sister of the child who developed measles at home, and she became infected at home. When the 4 secondary cases and 1 tertiary case were removed the ward was filled up with new patients who all had a history of previous measles.

Second case.—Bed 2: The patient, admitted on Feb. 18th, 1913, on the fourth day of scarlet fever, developed measles on the third day after admission to the ward. She was removed from the ward at once. There were 11 other patients in the ward at the time, 6 being protected and 5 unprotected. Two secondary cases arose in Beds 3 and 9.

7. *Chicken-pox.*—Twenty-four cases were treated in the ward. Eighteen cases were introduced into the ward in various stages of the disease, while 6 cases which were infected were left in the ward. Eight secondary cases arose, 6 developing in the ward and being left there, and 2 cases developing in cubicles to which the patients had been removed. Of the 18 cases introduced into the ward the following shows the stage in which introduced:—Three cases on the first day; fresh lesions after admission to ward. Two cases on the second day; fresh lesions after admission to ward. Four cases on the third day; 3 cases had vesicles on day of admission, but none after admission to the ward. One case had a fresh crop on day after admission to the ward. Four cases on the fourth day; 3 in pustular and scabbing stage, and 1 with fresh crop of vesicles on the fourth day. Two cases on the fifth day; in pustular and scabbing stage. Two cases on the sixth day; in scabbing stage. One case on the seventh day; in scabbing stage. In addition the 6 cases infected were left in the ward.

First case.—Bed 7: Second day of chicken-pox eruption; fresh crops in ward. Nine other cases in ward, 2 protected, 7 unprotected. No special nursing. No secondary cases.

Second case.—Bed 6: First day; fresh crops in ward; 8 other cases in ward. Three protected, 5 unprotected in ward. No special nursing. No secondary cases.

Third case.—Bed 6: First day; fresh crops till fourth day. Eleven other cases in the ward; 4 protected, 7 unprotected. No special nursing. Infected two patients—viz., the occupants of Beds 8 and 9. These were left in the ward, and another patient unprotected was admitted to Bed 12, making 6 protected cases and 6 unprotected cases. Special nursing was adopted with these secondary cases. These secondary cases infected 3 cases—the occupants of Beds 4 and 12 (left in ward) and the occupant of Bed 1, not in ward when chicken-pox developed. These 2 cases, special nursing, left 3 unprotected cases, who escaped.

Fourth case.—Not introduced until 6 months after 3 last infections, then on Oct. 9th, 1912. Bed 1: First day; fresh crops in ward. Ten other cases in the ward; 5 protected, 5 unprotected. Special nursing. No secondary cases.

Fifth case.—Bed 1: Seventh day; scabbing. Ten other cases in the ward; 3 protected, 7 unprotected. Special nursing. No secondary cases.

Sixth case.—Bed 1: Nov. 26th, second day; fresh crop next day. Special nursing. Eleven other cases in the ward; 6 protected, 5 unprotected. Infected occupant of Bed 12 (chicken-pox, Dec. 14th); left in ward. Special nursing. Among 6 protected, 4 unprotected. Infected occupant of Bed 7 (chicken-pox, Dec. 30th); left in ward. Special nursing. Leaving 7 protected, 3 unprotected. Infected occupant of Bed 5, who developed chicken-pox in Ward 7 (a cubicle ward), to which he had been removed.

Seventh case: Bed 1: Fifth day; pustules and scabs.

Special nursing. Inadvertently the skin was oiled by sister. Eleven other cases in the ward; 2 protected, 9 unprotected. No secondary cases.

Eighth case.—Bed 1: Fifth day; pustules and scabs. Eleven other cases in the ward; 7 protected, 4 unprotected. Special nursing. No secondary cases.

Ninth case.—Bed 1: Sixth day; pustules and scabs. Ten other cases in the ward; 1 protected, 9 unprotected. Special nursing. No secondary cases.

Tenth case.—Bed 1: Sixth day; pustules and scabs. Ten other cases in the ward; 2 protected, 8 unprotected. Special nursing. No secondary cases.

Eleventh case.—Bed 1: Fourth day; pustules and scabs. Ten other cases in the ward; 7 protected, 3 unprotected. Special nursing. No secondary cases.

Twelfth case.—Bed 1: Fourth day; pustules and scabs. Six other cases in the ward; 3 protected, 3 unprotected. Special nursing. No secondary cases.

Thirteenth case.—Bed 1: Fourth day; fresh vesicles, but not in ward. Eleven other cases in the ward; 5 protected, 3 doubtful, 3 unprotected. No special nursing. No infection.

Fourteenth case.—Bed 1: Fourth day; pustules and scabs. Three other cases in the ward; 1 protected, 2 unprotected. No special nursing. No infection.

Fifteenth case.—Bed 1: Fourth day; vesicles and pustules profuse. No fresh lesions in ward. Ten other cases in the ward; 4 protected, 6 unprotected. No special nursing. No infection.

Sixteenth case.—Bed 1: Third day; vesicles and pustules. No fresh lesions in ward. Seven other cases in the ward; 4 protected, 3 unprotected. No special nursing. No infection.

Seventeenth case.—Bed 1: Third day; vesicles; fresh vesicles next day. Eleven other cases in the ward; 3 protected; 8 unprotected. No special nursing. No infection.

Eighteenth case.—Bed 1: Third day; vesicles and pustules profuse. No fresh lesions in ward. Eleven other cases in the ward; 4 protected, 7 unprotected. No special nursing. No infection.

"Special nursing" means that the senior nurse on day or night duty was detailed off to look after the chicken-pox case, and was not allowed to touch any other patient except protected ones, and no other nurse was allowed to touch the chicken-pox patient or anything connected with him. At first we admitted chicken-pox patients to the ward in the earliest obtainable stage of the disease, and although the resultant cross infections were less than one would have anticipated in an ordinary ward we felt afterwards that it was unsatisfactory to admit chicken-pox in its earliest stages. However, from observations made by us before the opening of the ward we had thought that chicken-pox did not remain infectious so long as was generally supposed. Therefore, as will be noted in the list of cases, we commenced later on admitting chicken-pox at a more advanced stage of the eruption, with the intention of working backwards in order to find the earliest period of the disease at which we could place it safely in the ward. No cross infection occurred, although the last three cases of the series were admitted to the ward as early as the third day of the eruption, and in these no special nursing was employed.

We strongly protest against any deductions being drawn from lists of different infectious diseases treated in the same ward unless the days of disease upon admission to the ward and the ages of the patients are clearly stated, and, when it can be verified, the number of protected and unprotected individuals.

As the result of our experience we feel we can assert that we could treat these infectious diseases in one ward, almost certainly, with perfect safety were we to select the day of the disease on which to admit them. We are in some doubt as to the conclusions to be deduced from our experience, but we feel satisfied that the treatment of the above diseases is more satisfactorily carried out in this class of ward than in a cubicle ward—that is, rooms with incomplete partitions between the patients. It is open to perfect supervision by the sister and senior night nurse, everything that is done can be seen by the staff, and patients frequently comment on the routine. For the treatment of diseases when they are not conveyed by air such a ward as ours is also possibly better than box wards (rooms with complete partitions). It must not be lost sight of that the ward is a thoroughly well-ventilated one, and ample space is allowed for the patient. We have no experience of ill-ventilated or overcrowded wards, and consequently our chief deductions do not refer to any other conditions than those obtaining in our own particular ward.

We think our evidence in the case of scarlet fever goes somewhat strongly to show that the infection is probably not air-borne. The evidence as to whooping-cough is less definite and we are in some doubt as to whether it may be occasionally air-borne or not. It is to be noted that the whooping-cough infections occurred in summer, when the ventilation was even more free than in winter. We think it fair to assume that the infection was not carried by the staff, at least not in each instance, for had negligence been occurring cross infection of scarlet fever most probably would have arisen also.

From our experience in this and other wards we believe that the infection of measles is probably air-borne early in the disease, but that the power of infection soon passes. We are inclined to think that the infection of chicken-pox is air-borne early in the disease, but our experience goes to suggest that on and after the third day it is probably not air-borne: in our view this probability is the most interesting outcome of the work. For many years we have held that diphtheria infection is not air-borne. No cross infections arose from German measles or from mumps, but the small number of cases treated scarcely warrant any definite conclusion. On the whole, however, from this and previous experience in other wards, we tend to the view that they are probably not air-borne.

In conclusion, we wish to say deliberately that we would rather place a child of our own into this ward, as it is conducted, than into any other ward in the hospital.

THE EXPERIMENTAL PRODUCTION OF PURPURA IN ANIMALS

BY THE INTRODUCTION OF ANTI-BLOOD-PLATE SERA.

A PRELIMINARY COMMUNICATION.

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DURING the past few years a considerable amount of attention has been directed to the part played by the blood platelets in the process of blood coagulation and to the significance of abnormal blood-plate counts in those clinical conditions which have been grouped under the general heading of the Hæmorrhagic Diathesis. Opinion has been growing steadily that the function of the blood plates in maintaining the normal coagulability of the blood by supplying an indispensable thrombogenetic element may be an all-important one, and that any derangement of that function, as manifested, for instance, by a much reduced plate content, is liable to be associated with purpuric lesions, delayed blood clotting, and the like. The

experiments recorded in this note carry the matter to a further stage, inasmuch as they demonstrate the possibility of reproducing at will the purpuric condition in animals, and consequently afford a ready means for the obtaining of suitable material for further studies connected with the etiology and therapeutics of the condition.

Experimental Data.

In the course of some work, the primary object of which was to determine whether phagocyted blood plates might simulate certain forms of cell inclusions, an anti-blood-plate serum was prepared. Blood plates were obtained by the usual method of fractional centrifugalisation of citrated human blood, and almost completely freed from admixture with red cells. The deposit of plates was finally washed in physiological saline and inoculated intravenously into rabbits in a series of successive doses. The serum of the immunised rabbits was found to contain agglutinins for human blood plates and also for human red cells, as Cole (1908) had previously shown. In the presence of this anti-plate serum phagocytosis of blood plates took place, but the serum did not appear to be very powerful in this direction, and it was felt that another system might be employed with advantage.

The difficulty of obtaining a sufficient amount of fresh human blood from which to isolate blood plates in any quantity rendered it impossible to effect an intensive immunisation of the animals. Resort was therefore had to guinea-pig blood plates. By a fortunate circumstance guinea-pig blood could be obtained in large quantities, as over 100 animals are killed in the Institute every week for another purpose (viz., the routine testing of milk for tubercle bacilli). The blood obtained from 20–30 guinea-pigs (160–250 c.c.) was received into 2-3 times its volume of 1 per cent. sodium citrate in physiological saline. The whole mass was centrifuged for a period just sufficient to throw down the red cells and leave a cloudy supernatant fluid. This upper fluid, which contained the blood plates with a slight admixture of red cells, was then removed and centrifuged completely, yielding a white deposit. The latter was then freed from red cells as completely as possible by fractional centrifugalisation and used for the immunisation of rabbits.

It may be noted that from 20-30 guinea-pigs a yield of about 0·5-1 c.c. volume of white blood-plate deposit was usually obtained. At each inoculation the rabbit received either the half or the whole of this amount in saline suspension. Seven to eight injections were given intravenously at intervals of 6-8 days. The animals bore the injections well.

Action in vitro of the Antiplate Serum.

Guinea-pig blood plates were almost instantaneously agglutinated by the antiplate serum in high concentration, and definite agglutination was observed in a 1 in 128 dilution of the serum. Guinea-pig red cells in saline emulsion were also intensely agglutinated by the antiplate serum, and definite agglutination occurred in a 1 in 2048 dilution of the serum.

It has to be observed that, in testing agglutination of red cells, blood plates are always present in the emulsion, and it has still to be determined how far the intense agglutination of red cells is due primarily to agglutination of the blood plates with subsequent mechanical entanglement of the red cells. Whether the action on the red cells is primary or secondary may be a point of great importance when we come to consider the action of the antiplate serum *in vivo*. In a hæmolytic system, each tube of which contained 0·5 c.c. amboceptor dilution (inactivated antiplate serum), 0·5 c.c. complement (guinea-pig serum 1 in 10), and 0·5 c.c. guinea-pig red cells (2 per cent. suspension), immediate agglutination of the red cells occurred in the higher dilutions of the amboceptor, and thereafter lysis of the agglutinated cake of red cells proceeded slowly. Complete lysis of the cake did not occur in any tube, but grades of partial lysis occurred after standing 24 hours in tubes containing amboceptor in dilution of 1 in 128. The effect was in marked contrast to that obtained by an ordinary anti-guinea-pig red cell serum, which gave complete lysis in the higher dilutions of amboceptor without obvious antecedent agglutination.

Toxic Action of the Antiplate Serum.

The action of this serum *in vitro* was so striking that it was determined to test whether any toxic effects occurred *in vivo*.

Intravenous inoculation of the serum.—A guinea-pig of 300 grm. weight was given 1·5 c.c. serum in the jugular vein. It recovered easily from the slight operation and appeared quite active for a time. At the end of an hour and a half, however, the animal was found collapsed and death took place. Post mortem some free blood was found in the peritoneal cavity and on the surface of the liver. The blood had a reddish-brown tinge and was somewhat grumous. Blood from the heart emerged as a purplish granular fluid, and it was readily demonstrated that the red cells were completely agglutinated. This blood clotted quite normally, but the clot showed little tendency to retract.

Intraperitoneal inoculation of the serum.—A guinea-pig of 500 grm. weight received 1 c.c. of antiplate serum intraperitoneally on May 8th. About an hour after the injection the animal became sluggish and did not move readily on excitation. On the following morning (May 9th) it had quite recovered and it remained well on the 10th, but on the 11th it was found dead. Numerous subcutaneous hæmorrhages were found in the abdominal wall. The peritoneum contained free blood, and there were extensive hæmorrhages in both tunicæ vaginales. The blood from the heart had a purplish granular appearance as in the previous animal.

Subcutaneous inoculation of the antiplate serum—This method, which yields the most striking results, has been employed repeatedly, and the picture obtained is almost invariably the same. A subcutaneous inoculation in the groin of 1 c.c. of the serum gives rise on the following day to a hard subcutaneous swelling extending to the centre of the abdomen. On the next day the swelling has extended to the lower part of the sternum, and on the third day to the neck. As a rule the subcutaneous swelling becomes softer as the disease progresses. Purpuric spots have been noted on the external skin after parting the hair in white animals. The animals usually die on the third or fourth day. Post mortem one finds an extensive hæmorrhagic infiltrate over the front of the abdominal wall. Numerous petechiæ are present in other remote parts—viz., on the under surface of the skin, the lungs, diaphragm, epicardium, and intestinal serosa. In one animal, which received the dose of serum subcutaneously in the dorsal region, the skin on reflexion was found to present

an enormous number of hæmorrhages of all sizes simulating exactly the purpuric condition, and internally an enormous hæmorrhage was found in the mesentery of each Fallopian tube. The lymph glands in these animals have a bright red appearance and are consequently striking objects, while the spleen shows some enlargement and turgidity. The adrenals are quite pale, and the liver has a yellowish colour. The blood in the heart, if examined immediately after death, always presents a pale granular appearance, which is due to complete agglutination of the red cells.

Another interesting feature which these subcutaneously inoculated animals show is a form of cataract (double). This condition has been noted a few hours before death, and in animals which have died during the night the condition has been almost invariably observed post mortem. The isolated lens in these cases shows what might be described as a cup-shaped peripheral opacity, but at present a full description of this interesting condition must be withheld, as it is still the subject of study.

Systematic blood counts have not yet been made in the course of the disease, but isolated observations reveal a progressive fall of the red cells, counts as low as a million and a half being recorded. Numerous nucleated red cells also appear, and large swollen megalocytes. It is proposed to study fully the changes in all the cellular elements. The pathological histology of the organs, and particularly of the hæmopoietic system, promises to be of great interest, but so far it has only been touched. Examination of the red lymph glands on stained films shows numerous free red corpuscles generally collected in clumps and numerous micro- and macrophages stuffed with ingested red cells. Similar cells are seen in the spleen and also in the material from the local hæmorrhagic infiltrates. It is therefore clear that the red corpuscles which are agglutinated by the antiplate serum, either primarily, or secondarily through the mediation of the agglutinated plates, are removed by the lymph channels from the extravasation areas to the lymph glands, where they are further broken down.

The actual mechanism of the hæmorrhage may, it is hoped, find solution with further study of the lesion in all its stages. The agglutination of the red cells has constantly been observed in specimens of blood obtained by pricking the ear of animals during the second, third, and fourth days of the disease. The blood on emerging from the ear has a granular appearance, and when placed on a slide and gently agitated settles out into large red flakes. Clotting is delayed, and there is little tendency for the clot to retract. In several cases during the later stages of the disease it has been found extremely difficult to stop the oozing from the small puncture in the ear vein. A study of the coagulation time of the blood at all stages is being undertaken.

General Discussion.

The fact that a condition resembling purpura hæmorrhagica and presenting other features associated with the hæmorrhagic diathesis can be produced in animals by inoculation with an antiplate serum adds a further link in the chain of evidence connecting the blood plates with the phenomenon of blood coagulation, and with some of the derangements of that mechanism as manifested in the various types of the hæmorrhagic diathesis. A full discussion of the important rôle played by the blood platelets in the process of blood coagulation will be found in the careful experimental study of this subject by Bordet and Delange (1912). The properties of antiplate sera have been studied mainly from the serological point of view by various authors—Marino (1905), Cole (1908), Chevrel and Roger (1907), Le Sourd and Pagniez (1908), Sacerdotti (1908), Stschastnyi (1909), and others. Much of their work has been undertaken with the view of establishing the specificity of these sera for blood plates, and the matter cannot yet be considered as settled. In this connexion it may be observed that an absolutely pure antigen cannot perhaps be obtained, and consequently the demonstration of specific properties in the antiserum can rest only on a quantitative basis. Further research is needed on this aspect of the question.

With regard to the action of these sera in the body Le Sourd and Pagniez, who worked with antisera to rabbit platelets (immunisation of guinea-pigs with rabbit plates), found that intravenous injection of the sera into rabbits led to a disappearance of the blood plates from the circulation. This disappearance lasted for 24–36 hours, but ultimately the plates returned to normal proportions. During the phase of absent plates the blood clot showed no tendency to retract, but the retractility returned with the return of the plates.

It must be noted that a very transitory fall in the number of plates in the circulating blood can be produced by the injection of other antisera—e.g., ordinary hæmolytic sera—and even normal sera. According to Le Sourd and Pagniez, after injection of hæmolytic serum the plates returned in half an hour. It is further claimed by Achard and Aynaud (1908) that the injection into the blood of various colloidal substances, such as electrargol, egg albumin, egg lecithin, &c., may cause a temporary disappearance of the blood plates.

Le Sourd and Pagniez were unable to show that their antiplate sera had any appreciable toxic action; and Sacerdotti, who worked with antisera obtained by immunising rabbits with dog blood plates, found that the serum was not toxic for dogs except in large doses and in young animals. It is highly probable that the sera with which these authors worked were not strong enough to show toxic effects or to produce lesions at all similar to those described in this communication. The total amount of rabbit plates used by Le Sourd and Pagniez throughout the whole course of immunisation of the guinea-pig was only that derived from 250–400 c.c. of rabbit blood. However, one cannot generalise from an ascertained effect on guinea-pigs to a probable similar effect of a powerful antiplate serum on rabbits or dogs. This question must be left for further research.

Finally, mention should be made of the work which has been done on the variations in the plate content in various forms of purpura in man, and in this connexion I may refer to the work of Duke (1912), who made a study of the blood plates in 31 cases of hæmorrhagic disease. Of these cases, 17 had normal or slightly increased counts, while 14 had very low counts (below 65,000 per c.mm.). His general conclusion was that when the plate count descends below a level of 60,000 there may be an abnormal tendency to bleed (as measured by the time taken for the blood to stop flowing from a cut in the ear lobe); when the count descends below 10,000 this tendency is always present, and when below 1000 it is present in its most severe form. The observation of

Le Sourd and Pagniez, that during the stage of absent plates the blood clot does not retract, was confirmed by Duke in the human cases, and supports the original statement by Hayem that blood freed from blood plates does not retract.

Conclusion.—A condition resembling purpura and presenting other features of the hæmorrhagic diathesis can be produced in guinea-pigs by inoculation of an antiserum prepared by immunising rabbits with guinea-pig blood plates.

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TUBERCLE OF THE CRUS CEREBRI SIMULATING ENTERIC FEVER.

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THE diagnosis of enteric fever in its early stages is so difficult and such a constant source of anxiety both to the general practitioner and to those in charge of isolation hospitals, and the number of conditions which may be mistaken for it by competent observers is so numerous, that it should be worth while to record some particulars of a comparatively rare condition in which the earlier manifestations presented a clinical picture very difficult to distinguish from enteric fever.

This case, moreover, is one of a considerable number coming within the scope of my own recent experience which illustrate the danger of placing too implicit reliance on the Widal reaction in diagnosis. Without minimising its value when properly applied one is justified in pointing out that it is a method in which the personal equation is very considerable, and I have known more than one doubtful case in which discrepant results were recorded by different observers. I have also had charge of a number of cases in which a "positive" reaction was unassociated with any clinical evidence of the disease in its later stages. Not all of these were ambulatory cases, for several of them developed in other and quite definite directions. The simple process of taking a blood tube and examining it or sending it away to be examined must not be allowed to become an easy substitute for careful and accurate observations of the purely clinical aspect of the case, and I am inclined to the belief that a "positive" result should only be regarded as conclusive if it occurs in considerably higher dilutions than those with which many observers are satisfied.

CASE 1.—The patient a girl aged 20, was notified to me as suffering from enteric fever and admitted into the Wigan isolation hospital on May 8th, 1912. She was a well-nourished girl and worked in a cotton mill, but was somewhat anæmic when admitted. Her home conditions were bad, and she came from an insanitary house in an area from which several cases of enteric fever had recently been notified. There was a history of a week's illness with continued fever, constipation, distended abdomen, and foul tongue. An examination of the blood had given a "positive reaction," dilution not stated. Throughout her illness headache had been a marked feature. Her temperature on admission was 100° F., her pulse 80, regular and normal in volume and frequency. Her respirations, however, were 28 per minute, and continued throughout her illness to show a frequency out of proportion to that of the pulse, only occasionally dropping to 20, and never below that.

The abdomen was slightly distended, but not more so than might be expected in view of the constipation which was present. There were no spots. The splenic dulness was increased, but the spleen was not palpable. The tongue was uniformly covered with a light brownish fur, the teeth were defective, and the breath most offensive. A further blood examination showed that there was no clumping in dilutions above 1 in 40, and as it was found that the patient had been in the hospital a year previously with an undoubted attack of enteric fever the doubtful results of the blood test could be ignored. The bowels were evacuated by an enema, and the result was a well-formed normal-looking motion. She complained of intense persistent bilateral frontal headache, but had no other symptoms, and took a fairly liberal diet quite well. She had no cough, but there was a small area of slight dulness and increased vocal resonance immediately below the right clavicle. The urine was normal in quantity and quality.

On the day following admission the headache was much better, and this improvement was maintained, but the temperature fluctuated within a few decimal points of 100°, without definite morning remissions. On the afternoon of her fourth day in hospital the nurse noticed that the girl's left pupil was dilated, and two hours later, at 5 P.M., she had an epileptiform convulsion. This passed off after a few minutes, but left her with the pupil still dilated and homonymous diplopia which lasted for five hours and then disappeared. By the next morning her temperature had fallen to normal, she had no headache or diplopia, and felt very well, but the dilatation of the pupil persisted, and there was no reaction either to light or convergence. An examination of the fundus showed nothing abnormal. She remained in this condition for three days, with the temperature oscillating quite irregularly between normal and 100°, the pulse averaging 96, and respirations 24. But on the eighth day after admission the diplopia reappeared and persisted throughout the case. I found that on the left side the image was displaced downwards and to the right, there was complete loss of convergence, the other ocular movements were limited, and there was already slight proptosis. The temperature took on a definitely hectic type, with regular morning remissions, but not rising above 101°. Antisyphilitic remedies were freely tried, but without any effect.

On the sixteenth day after admission there was marked weakness of the right hand, with some tremor, and the headache returned. From this period the symptoms developed very rapidly. The right hand became completely paralysed, and the paresis gradually extended upwards to the forearm and arm, with characteristic tremors. Before paralysis was complete the arm if extended was dropped in a series of jerks. Oculo-motor paralysis on the opposite side became complete, with marked proptosis. The headache returned and persisted;

there was typical cerebral vomiting. Articulation and deglutition were affected by commencing hypoglossal paralysis, and the mental condition became dull, threatening complete dementia. The temperature continued to be hectic in type, its range increasing up to 102°. By this time the picture of Benedikt's syndome was complete, and the diagnosis of a tumour of the left crus cerebri was established. On July 16th the patient was removed to the Royal Albert Edward Infirmary, Wigan, and on the 18th chloroform was administered, and Mr. E. H. Monks trephined over the left temporal bone. In view of the hectic temperature the brain was deeply explored for pus, but none was found. For several days after the operation the headache was relieved and the mental condition improved. Vision was found to be 8/12 in the affected eye, and the disc remained normal. By the beginning of August, however, her mental condition again became duller, and a hernia cerebri began to develop. Trophic changes became marked, and there was loss of vitality of the soft tissues. She finally became comatose, and died in this condition on Sept. 9th.

On post-mortem examination I found a small yellowish nodule on the surface of the cerebellum. The whole of the left crus was replaced by a hard mass with ill-defined limits, and five small masses similar to that in the cerebellum were found in the cortex cerebri. These tumours, which were about the size of lentils, were distributed on both hemispheres, they were clearly defined, and could be easily enucleated from the surrounding tissues. On microscopic examination the whole of these masses were found to be tuberculous, and numerous tubercle bacilli were demonstrated in the sections. There was a small tuberculous lesion in the apex of the right lung. This was caseous in the centre and surrounded by dense cicatricial tissue. The other organs were healthy.

CASE 2.—An interesting sequel to the above case is provided by the fact that a sister of the patient was recently notified to me as a case of enteric fever, and admitted into the isolation hospital with a positive Widal reaction in dilutions up to 1 in 60. This second girl presented nearly all the symptoms that one habitually associates with enteric fever, although no spots were apparent on the skin; and a characteristic of the genuine cases of this disease occurring locally at this period was an unusually exuberant eruption of spots. On the other hand, her abdomen was distended and tympanitic to an extent that made any attempt at deep palpation inadvisable, and she had diarrhœa with stools of a character consistent with the diagnosis. My own attempts to isolate any bacillus of the typhoid group proved negative. The temperature chart for six days after admission to hospital was quite typical of enteric fever, and the case was entered on my books as one in which the diagnosis was confirmed. Then came a sudden, a dramatic, drop in the temperature, which remained normal for several days, while the girl improved in health, appetite returned, and all "typhoid" symptoms vanished. As the meteorism disappeared it became possible to examine the abdomen more accurately, when it was at once found that the whole of the lower part of the cavity was filled with a doughy tumour, dull on percussion, and displacing the intestines upwards. Von Pirquet's test gave a negative result, but an injection of tuberculin was followed by a marked general reaction, and the temperature assumed the character known as "typus inversus," marked by a morning rise to between 99° and 100°F., with evening remissions to normal or subnormal. This girl has no symptoms or signs at present of any pulmonary mischief, but I think there can be no reasonable doubt that she is the subject of abdominal tuberculosis in an advanced degree.

The history of these two cases appears to me to be worth recording inasmuch as they illustrate the difficulties with which competent observers are still beset in attempting the early diagnosis of enteric fever, the admirable imitation of enteric symptoms which the tubercle bacillus, operating in very different parts of the organism, can accomplish, and the danger involved in too implicit a reliance on the Widal test in moderate dilutions. I have to express my thanks for much help in connexion with the first case to Dr. F. Rees, honorary physician, Mr. Monks, honorary surgeon, and Dr. J. Oag, late house surgeon to the Wigan Royal Infirmary.

Note.—Since writing the above the diagnosis of abdominal tuberculosis in the second case has been confirmed by laparotomy.

Wigan.

THE WASSERMANN REACTION IN MALARIA.

BY WILLIAM FLETCHER, M.D. CANTAB.,
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IT has been stated by many observers that the presence of malaria parasites in the blood gives rise to a positive Wassermann reaction. Meier and Bonfiglio[1] in Italy found that malarial patients gave the reaction as long as they had malarial parasites in the blood. Boehm[2] examined 46 cases and obtained a positive result in 16. De Haan[3] in Java examined 163 cases, of which 63 were positive. At the annual meeting of the British Medical Association held in 1910, Professor Wassermann gave as his opinion that "one should employ the reaction with people who have been in the tropics and contracted malaria, only when one is convinced, by their history, that they have had no malarial attack during the last quarter of a year."

In the majority of the cases which are examined here, in the Federated Malay States, it is impossible to make sure that the patients have been free from malaria for a period of three months. This investigation has been undertaken, therefore, in order to determine to what extent malarial infections influence the results of the Wassermann reaction as practised in this institute. With this object 50 cases of malaria have been examined; 20 of these were subtertian, 17 simple tertian, and 13 quartan. In every case malarial parasites were present in the blood at the time it was collected. All the 20 subtertian cases gave negative results except three. One of these three had a scar on his penis due to a chancre from which he had suffered six years before. The other two subjects who gave a positive reaction were not examined for syphilis when their blood was taken and they left the hospital on the following day before their cases were investigated. All the 17 simple tertian cases were negative except one, who had suffered from syphilis three years before. All the

[1] Brit. Med. Jour., 1910, vol. ii., p. 1429.
[2] Centralblatt, Band xliii., p. 631.
[3] Archiv für Schiffs- und Tropen-Hygiene, Band xvii., p. 693.

13 quartan cases were negative except one patient, who was covered with scars due to an attack of syphilis seven years before. In short, all the 50 patients with malarial parasites present in the blood gave a negative Wassermann reaction except five, and in all of these five cases which could be investigated there was clear proof of a former attack of syphilis. In the examination of these malarial sera seven cases of active syphilis were employed as controls, four of them were in the secondary and three in the tertiary stage of the disease. Each of them gave a well-marked positive reaction. All the patients were Asiatics; 29 of them were Chinese, 18 were Tamils, 2 were Sikhs, and 1 was a Malayalum.

As it was considered possible that the intensity of the infection might influence the reaction, in each case a rough estimate was made of the number of parasites by counting the fields examined and the number of parasites seen. In ten of the cases there was an average of two or more parasites in each field. In four instances the average was more than nine. On the other hand, cases were also examined in which there was only a small infection: in one as many as 159 fields were searched before a parasite was encountered. It was found, however, that the presence of malarial parasites, whether in small or large numbers, did not cause a positive reaction.

In all the foregoing cases the serum was inactivated by being heated for 30 minutes at a temperature of 55° C. before the Wassermann test was carried out. But in 20 of them, before the serum was inactivated, it was divided into two portions, one of which was tested while fresh and active, while the other portion was heated before being used. With the heated serum the reaction was negative in all the 20 cases except one who was syphilitic. With the fresh serum, on the other hand, there was a weak positive reaction in 4 cases (two to four doses of complement deviated) and a doubtful reaction in 3 (incomplete lysis); the syphilitic case was, of course, positive. It is evident, therefore, that the results, when the serum is fresh, are different from those obtained when it has been inactivated by heat. No doubt the use of fresh serum has been responsible for some of the positive results which various observers have obtained in cases of malaria; but probably the chief cause of confusion lies in the loose way in which the term "Wassermann reaction" is now employed. It is used not only to denote the test as originally carried out by its author, but is also applied to the very numerous modifications which have arisen. This confusion would be obviated to a great extent if serologists would give details of the technique which they have employed.

The method employed here was that of Browning, Cruickshank, and McKenzie, the distinguishing feature of which is the use of two antigenic extracts: one of ox-liver lecithin, and another consisting of a mixture of lecithin and cholesterin. The authors of this modification found that, in the ordinary methods of carrying out the test, a normal serum in the presence of an emulsion of organ extract may absorb more complement than the sum of the amounts absorbed by the serum and the emulsion separately, so that in such cases the reaction is apparently positive. They overcame this difficulty by the employment of the two antigens mentioned above, and they found that "if a serum absorbs more complement in the presence of lecithin plus cholesterin than it absorbs in the presence of lecithin alone, then this is evidence of its syphilitic nature."[4]

Browning, Cruickshank, and McKenzie employed an anti-ox-hæmolytic system. The use of this system entails the previous saturation of the guinea-pig serum with ox corpuscles and centrifugalisation at 0° C. in order to remove the natural amboceptor which may be present. In order to obviate this difficulty the hæmolytic system employed here was that in which human corpuscles are sensitised with the homologous immune serum from the rabbit.

Conclusion.—The presence of malarial parasites in the blood does not cause the serum to give a positive Wassermann reaction when the method of Browning, Cruickshank, and McKenzie is employed.

Kuala Lumpur.

ON THE EFFECT OF GASTRIC AND PANCREATIC FERMENTS ON THE POTENCY OF TINCTURE OF DIGITALIS.

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AND
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(*From the Physiological Laboratory, Surgeons' Hall, Edinburgh.*)

FEW drugs are subjected to so much criticism as the tincture of digitalis. This is doubtless due to two reasons. In the first place samples vary in their potency, and unless they have been subjected to physiological tests the variation is first manifested when the drug is administered to a patient. In the second place samples of digitalis cannot be relied upon to retain their full potency longer than one year.

It has occurred to us that another possible factor in bringing about uncertainty of action might be the effect of the digestive juices. We therefore undertook the following investigations. The minimum lethal dose of samples of tincture of digitalis to frogs was ascertained. Each sample was then kept in contact with a digestive ferment at body temperature for six hours and the minimum lethal dose was again determined.

Experiments with Pepsin.

Six samples were tested. 10 c.c. of a tincture whose minimum lethal dose had been determined were incubated at 37° C. for six hours along with about 5 gr. of pepsin (Duncan Flockhart and Co.) and 1 c.c. of hydrochloric acid 0·2 per cent. At the same time a piece of fibrin which had been coloured with carmine and well washed was placed in connexion with pepsin and acid in similar dilution in order to have check observations on the activity of the ferment. After six hours it was found that the tinctures had lost bulk owing to the evaporation of spirit. The bulk was made up to 20 c.c. with water and the minimum lethal dose was again tested. This dilution was of course allowed for in making the experiments. Of 6 samples tested it was found that 4 retained their full potency. In

[4] Recent Methods in the Diagnosis and Treatment of Syphilis, Browning and McKenzie, p. 37.

2 cases there was a loss of potency which did not exceed 30 per cent. The loss may have been less, but finer graduations were not investigated.

Experiments with "Pancreatin."

Six samples were tested in the same way. 10 c.c. of the tincture was put up with 5 gr. of "pancreatin" (D.F. and Co.) and 1 c.c. of sodium carbonate 1 per cent. This was a much more powerful ferment than the pepsin, as the fibrin was always completely digested at the end of six hours. Of the 6 samples tested it was found that 2 retained their full potency, 2 had lost potency to an extent not exceeding 30 per cent., and 2 had lost potency to an extent not exceeding 50 per cent.

It is thus apparent that the effect of pepsin in large quantity on the tincture of digitalis is comparatively slight. The effect of the pancreatic trypsin may be considerable, but it is doubtful whether tincture of digitalis given by the mouth ever comes much in contact with it. It may be concluded that as tincture of digitalis is never likely to be subjected to such a severe digestive ordeal under the conditions in which it is administered therapeutically there is little likelihood of any loss of potency before it is absorbed.

Protocols of Experiments.

Pepsin.

Samples.	Weight of frog in grammes.	Minimum lethal dose in minims.	Dose given.	Result in 3½ hrs.
1	30	4·5	4½	Alive.
	32	4·8	5	,,
	13	1·9	2½	Dead.
	12	1·8	2½	,,
		(Weakened not more than 30 per cent.)		
2	25	3·7	3½	Alive.
	26	3·8	3¾	Dead.
	40	6·0	6	,,
		(Not weakened.)		
3	20	3·0	3	Dead.
	25	3·7	3½	,,
		(Not weakened.)		
4	28	4·2	4½	Alive.
	17	2·5	2½	Dead.
		(Not weakened.)		
5	24	3·6	3½	Alive.
	26	3·9	5	Dead.
		(Weakened not more than 30 per cent.)		
6	23	3·4	3½	Dead.
	17	2·5	2½	,,
		(Not weakened.)		
		Pancreatin.		
1	20	3·0	3	Alive.
	30	4·5	6	,,
	32	4·8	7	Dead.
		(Weakened not more than 50 per cent.)		
2	27	4·0	4	Alive.
	28	4·2	5½	,,
	33	5·0	7½	Dead.
		(Weakened not more than 50 per cent.)		
3	13	·9	2	Dead.
	18	2·7	2½	,,
	20	3·0	3	,,
		(Not weakened.)		
4	28	4·2	4	Alive.
	19	2·8	4	Dead.
	17	2·5	4	,,
		(Weakened not more than 30 per cent.)		
5	24	3·6	3½	Alive.
	25	3·7	4	,,
	39	5·8	8	Dead.
		(Weakened not more than 30 per cent.)		
6	24	3·6	3½	Dead.
	23	3·4	4½	,,
		(Not weakened.)		

TRAUMATIC EXFOLIATIVE KERATITIS.

BY PHILIP A. HARRY, M.D. EDIN., D.P.H. EDIN.,
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TRAUMATIC exfoliative keratitis is a comparatively rare condition, met with chiefly in adult males and characterised by severe neuralgic pains, lacrymation, photophobia, and a tendency to periodical relapses. A history of traumatism is invariably present, and the patient is always able to give the exact date; as a rule the injury is trifling and apparently insignificant, and but for his certainty that the whole trouble commenced at the time stated one would be inclined to belittle or ignore altogether the history of injury. During the past 12 months six cases have come under my observation; in this series the traumatisms have been produced by such trivial things as a child's finger-nail, the sharp end of a piece of straw, the edge of a lady's hat, a projecting hatpin, the point of a dried leaf, and a crust of bread. The patients were all seen in private, and were found to be thin, poorly nourished, and neurotic or arthritic in type.

The symptoms are definite and clearly stated: one morning when the patient awakes, simultaneously with the opening of his eyes, he experiences a sharp stab, as if a needle had been pushed through the eye. Touching or rubbing the eye or any subsequent attempt to separate the lids causes a repetition of the same pain. Relief is only obtained when he buries his head face downwards in the pillow or makes firm pressure on the globe with his fingers. The eyeball is red and vision slightly defective; with or without treatment the attack lessens in severity, and the eye returns apparently to normal in a few days. In four to six weeks, just as the patient is about to forget the previous attack, a recurrence takes place; it is usually a complete surprise to him, there is no warning, nor can he remember any indiscretion on the previous night to account for it. The second and third attacks are never as severe as the first; subsequent ones may, however, be quite as bad as the second or third. Relapses take place with more or less regularity every four to six weeks. The following case sent up by Dr. L. Kilroe, of Sudden, is typical of the series.

A man, aged 30, came complaining of periodical neuralgic pains in the right eye. Three years ago he was struck in that eye by a crust of bread; the blow was aimed from the right side. He suffered little or no pain at the time, but since then at intervals of about six weeks he has had relapses of the character above mentioned. He has been treated by his medical man with fomentations, protargol drops, lotions, &c. The severity of the attacks has diminished.

Examination during an attack shows a very sensitive eye, the patient is nervous, irritable, resents any interference, and a thorough inspection is exceedingly difficult. He gets some relief if the upper lid is kept off the globe, but as soon as the tears evaporate the epithelium dries and the pain returns. There is rarely any general headache; there may be pain on pressure over the supra-orbital as its emerges from its foramen; as a rule the painful symptoms are entirely confined to the eye. Photophobia and lacrymation are marked, ciliary congestion is present, tension is normal or slightly minus. If the patient can make any attempt to read the test types it is found that his vision is considerably reduced. Examination of the

cornea with the binocular loupe or the corneal microscope shows an intact surface with a milky appearance at one spot. Staining with fluorescin produces a negative result. With the ophthalmoscope the milky area is recognised as an irregular shadow with diminished transparency.

Examination during an interval of attacks shows a clear cornea, and occasionally a small yet definite depression at the seat of injury; this is difficult to demonstrate and is only noticeable in certain positions of the light. There is always some ciliary congestion in that part of the limbus nearest the depression. In no case was vesical formation noticed, either during or after an attack; the only corneal defects are the milky opacity during, and the minute depression or crack in the epithelium after, an attack. The sensitiveness of the cornea is not diminished.

In the condition under discussion the attachment of the epithelium to Bowman's membrane is exceedingly loose; if the upper layer of the cornea is touched with a cotton-tipped probe it slides from Bowman's membrane like a cloth off a well-polished table. The same thing is said to occur after death, but the examination of several corneæ in the post-mortem room has failed to confirm this statement. The epithelial layer crinkles or ruffles and comes away in patches, but there is no exfoliation. In the normal healthy individual it is not possible to separate the two superficial layers of the cornea. If an attempt is made to remove the epithelium it comes away only from the area that is being scraped.

In traumatic exfoliative keratitis the superficial layer separates with the greatest ease in the immediate vicinity of the original abrasion, and the separation can be continued up to about 3 mm. from the corneo-scleral junction. Beyond this point it is practically impossible to go, and if the attempt is made bleeding soon takes place. A similar condition occurs in old people after operations on the cornea; the exfoliation, however, extends only a short distance from the wound, and a definite keratitis develops sooner or later. The diagnosis must be made from several corneal diseases and dystrophies.

Herpes febrilis corneæ occurs in febrile diseases, especially influenza, pneumonia, measles, and is associated with an eruption of vesicles on the cornea. Herpes zoster corneæ is also associated with an eruption of vesicles, but is distinguished from the above by running a considerably severer course. Keratitis vesiculosa or bullosa occurs in blind diseased eyes.

In an article on this subject[1] Dr. J. A. Menzies (until recently honorary ophthalmic surgeon at the Rochdale General Infirmary) discusses the etiology and treatment and gives a list of references. The theory that gains the most supporters holds that the new epithelium formed after the abrasion is not firmly enough attached to the subjacent tissue, and so becomes detached easily; the inequalities of the corneal epithelium become interlocked with corresponding inequalities on the tarsal surface; when the eye is suddenly opened, especially after a prolonged sleep, the lid pulls on the corneal epithelium, raising it in the form of a blister and drags upon the nerve filaments so as to cause pain. This theory does not explain the spread of the exfoliation from the injured area almost to the limbus, nor the fact that such separation does not occur in xerotic conditions of the cornea. Several other theories are mentioned, such as the retention of a minute foreign body, transudation of lymph under the epithelium forming a traumatic keratitis bullosa.

A far more likely theory is the manufacture, at the site of the erosion, of a toxin, which although unable to penetrate Bowman's membrane can spread along its surface, producing exfoliation up to a certain point. The exfoliated layer, floated out on a slide and examined under the microscope, shows among other changes a granular degeneration of the intracellular spaces, most marked near the seat of injury. At the centre of this area the disintegration progresses to actual loss of substance; this corresponds to the depression that is produced in the middle of the milky looking area.

In all these cases the abrasion of the cornea was produced tangentially to the surface, and it is more than probable that under the flap thus formed organisms were introduced, and the quickly healing epithelium left them embedded. The toxins they produce give rise to the exfoliation, and the changes in the epithelial cells at this spot cause loss of lustre and transparency. When these changes have progressed for some time, as during sleep, the friction produced by opening the lids will ruffle the epithelium and cause the symptoms complained of. The successful treatment of the cases under observation has been based on this theory.

The treatment usually recommended consists of bandaging the affected or both eyes, the introduction of neutral fatty substances, and the instillation of cocaine or other drops. The relief obtained from this is only temporary. More permanent relief is obtained by touching the eroded spot with some form of caustic—for example, silver nitrate, carbolic acid, iodine, or formalin; but the results are not always certain. The same remark applies to the use of the curette before cauterising, while in more than one case opacities have been noticed after this method of treatment.

In my series of cases the following was the line of treatment carried out. The conjunctival sac is rendered anæsthetic and carefully douched with normal saline solution. By means of a Bowman's discission needle several oblique punctures are made into the anterior chamber at and around the seat of the trauma; on each occasion before withdrawing the needle it is turned at right angles on itself to allow the antibody-containing aqueous to escape slowly. As a rule the epithelium is raised from Bowman's membrane by the fluid. This, together with the use of weak peroxide of hydrogen lotion and 2 per cent. chloretone in parolene drops, is sufficient to produce a cure and prevent relapses.

Rochdale.

[1] Ophthalmic Review, vol. xxi., December, 1902.

SIXTH INTERNATIONAL DENTAL CONGRESS.—As already announced in our issue of Feb. 14th, p. 505, in fuller detail, the Sixth International Dental Congress, the first ever held in this country, will take place at the University of London and the Imperial College of Science and Technology, South Kensington, from August 3rd to 8th, under the presidency of Mr. J. Howard Mummery. His Majesty the King is patron of the Congress, which will be attended by distinguished representatives of the dental profession from the leading countries of the world, and which is under the official recognition of the Governments of this and other countries. Application for membership should be made to the general secretaries, 19, Hanover-square, London, W., enclosing the amount of subscription, namely, 30*s.* for personal membership, and 15*s.* for any member of the family who may wish to attend as a visitor.

Medical Societies.

ROYAL SOCIETY OF MEDICINE.

SECTION OF LARYNGOLOGY.

Exhibition of Cases and Specimens.

A MEETING of this section was held on May 27th, Dr. D. R. PATERSON, the President, being in the chair.

Professor GUSTAV KILLIAN (Berlin) gave a demonstration of Suspension Laryngoscopy on Living Subjects.

The following were the exhibits:—

Mr. E. B. WAGGETT: Epithelioma of the maxillary antrum and hard palate three years after operation (microscopic specimen exhibited). Sarcoma originating in the floor of the right maxillary antrum two years after operation (specimens exhibited). Endothelioma of the nose three weeks after operation.—Dr. HILL described a case of carcinoma of the upper jaw which was undergoing treatment by radium at the present time; four emanation tubes were inserted into different parts of the growth and left *in situ* for 48 hours.—The PRESIDENT expressed the opinion that radium should not take the place of operative treatment in those cases suitable for operation.—Mr. WAGGETT said that radium was not tried in the case of endothelioma because it was found possible to remove the growth freely by means of the knife. He suggested that the pulsation in certain tumours was due to the manner in which the blood-supply entered the tumour through a constriction near its base.

Mr. HERBERT TILLEY: 1. Case of Laryngo-fissure for Epithelioma of the Vocal Cord nine years after operation.—Sir FELIX SEMON expressed his pleasure at seeing a case do so well without the severe operation of total removal of the larynx.——2. Specimen of Vascular Fibromata removed from larynx by the indirect method since the last meeting of the section. Mr. Tilley stated that the indirect method was not yet superseded by the direct.—Professor KILLIAN said that he still removed a large proportion of his laryngeal growths by the indirect method.—Sir FELIX SEMON thought the younger generation of laryngologists might practise the indirect method with profit; those cases which were most difficult to manage by the direct—e.g., those growths in the anterior commissure—were most easy by the indirect.—Sir STCLAIR THOMSON thought that both methods had their special indications.—Dr. DUNDAS GRANT said that with small children the suspension method with a general anæsthesia was ideal.——3. Case which illustrates the successful endonasal treatment of Unilateral Pansinusitis.—In connexion with this case Dr. GOLDSMITH (Canada) showed a specimen of Canadian Indian skull which showed absence or obliteration of both frontal sinuses.—With reference to Dr. Goldsmith's specimen, Dr. JAMES DONELAN suggested that he would like to know something of the history of the case which might suggest a reason for the absence of the sinuses.—Dr. GOLDSMITH said in reply that the case had died 500 years ago.——4. Two curettes for the removal of the anterior ethmoidal and "agger" cells. 5. A collection of Foreign Bodies removed from the Lower Air Passages and Œsophagus. 6. Skiagrams illustrating Foreign Bodies in the Bronchi and Malignant Strictures of Œsophagus.

Mr. E. D. DAVIS: 1. Specimens obtained from a case of Laryngo-fissure for Epithelioma of the Right Vocal Cord. 2. A case of Gummatous Ulceration of the Larynx. 3. A case of Gummatous Perichondritis. 4. A case of Advanced Laryngeal Tuberculosis treated by tracheotomy and curetting. Mr. Davis stated that curettage was performed with the hope of leaving out the tracheotomy tube, but that this was not found possible.

Dr. DAN MCKENZIE: 1. ? Malignant Disease of Larynx. Dr. McKenzie stated that since sending in notes of this case it had been proved to be tuberculous. 2. ? Tertiary Infiltration of the Larynx simulating Malignant Disease.—Dr. DUNDAS GRANT was of the opinion that the case was syphilitic.—Dr. MCKENZIE said that the pathological report was doubtful.——3. Piece of bone removed from a larynx by suspension laryngoscopy.

Mr. W. STUART-LOW: 1. Osteomyelitis of the Superior Maxillary Bone and Maxillary Antral Suppuration in a child aged 11 months at the time of operation.—Dr. A. BROWN KELLY thought that the infection probably originated in a dental sac and then infected the bone.——2. A girl, aged 5, from whose naso-pharynx a large Spindle-celled Sarcoma was removed six weeks ago.—Dr. DUNDAS GRANT recalled a number of such cases which were wrongly diagnosed as "adenoids."

Mr. W. M. MOLLISON: 1. Case of Carcinoma of Maxillary Antrum; operation and removal of glands.—The PRESIDENT congratulated Mr. Mollison upon the result, and the latter, in reply, mentioned that the operation was made easy by the administration of ether by the intratracheal method.——2. Hyperostosis of Superior Maxilla.

Dr. DONELAN: 1. Case of Paralysis of both Superior Laryngeal Nerves occurring in the course of disseminated sclerosis from lead poisoning. 2. Instruments for the submucous resection of the nasal septum.

Mr. WALTER G. HOWARTH: Carcinoma of Arytenoepiglottic Fold and Pyriform Fossa removed by transthyroid pharyngotomy.

Mr. W. DOUGLAS HARMER: Chondro-sarcoma of Pharynx 12 days after diathermy.

Dr. DUNDAS GRANT: A case of ? Rhinoscleroma.

EDINBURGH MEDICO-CHIRURGICAL SOCIETY.

Jackson's Membrane and the Genito-mesenteric Fold of Peritoneum.—Intratracheal Insufflation of Ether.

A MEETING of this society was held on June 3rd, Dr. JOHN PLAYFAIR, the President, being in the chair.

Mr. DOUGLAS G. REID (Cambridge) read a paper on Jackson's Membrane and the Genito-mesenteric Fold of Peritoneum. In relation to C. H. Mayo's suggestion regarding the congenital origin of Jackson's membrane, he showed how the cæcum might actually come to lie in a pocket formed by the genito-mesenteric fold displaced to the right, off the line of the spermatic or ovarian vessels. This displacement was a result of pressure exerted upon the fold by the pelvic colon. He exhibited photographs of fœtuses and adults which showed clearly that strong and extensive pre-colic membranes, in relation to the cæcum, ascending, descending, and iliac colons, might be formed by appendices epiploicæ. These might constrict the bowel to a remarkable degree. The expansion of the narrow descending colon would be prevented or hampered. He considered the other ways in which pre-colic membranes might arise apart from pathological causes. The genito-mesenteric fold of peritoneum which he had described occurred in 55 per cent. of 20 fœtuses, 70 per cent. of 10 children at birth, and 33 per cent. of 18 adults. The fold was a track along which infection or inflammation might spread from the bowel (appendix, ileum, cæcum) to the ovary (or ovaries) and Fallopian tube or in the opposite direction. In this connexion it was noteworthy that appendicitis was quite common in children. He demonstrated close connexions between the bowel (ileum, appendix) and the right ovary and Fallopian tube by means of the fold. He showed how intestinal flexures might become acute during fœtal life by movements which approximate the limbs of the loops. It was important to distinguish between flexures of the bowel which were permanent and those which had no claim to be regarded as other than temporary. He showed how flexures of the ileum, appendix, and ascending colon might become permanent through adhesion of the bowel to the right surface of the genito-mesenteric fold. He demonstrated mechanical causes of peritoneal adhesions. Photographs were exhibited which showed clearly that the pelvic colon, through the pressure which it exerted on neighbouring parts, was an important cause of adhesions. It was capable of producing all the adhesions which the surgeon might encounter in the ileo-cæcal region. This action of the pelvic colon partly explained how the genito-mesenteric fold was not so common in the adult as in the fœtus and child at birth. The genito-mesenteric fold was another important cause of adhesions. Through anchoring, or indeed exerting traction upon the peritoneum it could even lower the root of the mesentery before the descent of the cæcum. The fold might cause abnormal downward displacements of the root of the mesentery, duodenum, cæcum, and ileum. "Cohesion" might be a better term than

"adhesion." These "cohesions" formed ready-made barriers resisting the spread of inflammation. They were not due to pathological causes. The genito-mesenteric fold also explained retro-colic and other positions of the appendix, retro-colic abscess, &c. Photographs of various peritoneal folds and fossæ were shown. Development occurred during fœtal life of the hepato-colic (cysto-colic) ligament, and of adhesions involving the posterior surface of the stomach, great omentum, &c. The firm resistance of the relatively enormous liver of the fœtus must be taken into consideration in accounting for these adhesions. Other points were considered and were all illustrated with photographs of actual specimens, fœtal and adult.—In the discussion which followed Mr. C. W. CATHCART said that he was glad to know that many of the folds met with were anatomical and not pathological in nature. He was of opinion that adhesions could not be the only reason for the pathological changes which followed, and he thought that the action of peristalsis must be a great contributory cause. It was well-known that the intestines might be buried in adhesions and yet no obstruction was present. Unless there was a failure in peristalsis obstruction did not occur.—Mr. D. P. D. WILKIE said that the folds which Mr. Reid had demonstrated were often what they were in the habit of calling pathological. There were three kinds of folds: (1) parieto-colic folds of developmental origin; (2) folds which were obviously of inflammatory origin were undoubtedly found; and (3) folds which resulted from thickening of the peritoneum and mesentery with adhesions.—Dr. D. CHALMERS WATSON said that he felt somewhat sceptical as to whether many of these adhesions or folds were really anatomical or developmental in character.—Mr. A. SCOT SKIRVING asked if Mr. Reid considered the genito-mesenteric fold were entirely of developmental origin or not; and if so, why did it occur only in 33 per cent. of adults.—Mr. LEWIS BEESLY agreed with Mr. Reid as to the anatomical origin of these folds. They were found in living bodies but not in dead bodies. In a great many children and adults these folds were very commonly met with during operation, and yet it was rare to meet with them in the dissecting room. Did these structures change after death? In the living body one could easily lift up the ascending or descending colon with their peritoneal coats, but if one tried to do this in the dead body the peritoneum would tear. He asked whether the appendices epiploicæ were not merely the remains of the gastro-colic omentum.—Mr. REID, in reply, said that the genito-mesenteric fold was not always present. The reason why it was not so commonly met with in the adult as in the fœtus was because of the pressure exerted on the fold by the pelvic colon, so causing adhesion. Again, the mesentery might fuse down to the genito-mesenteric fold, and so might obliterate it. Adhesions were undoubtedly formed by pressure; whenever a sheet of peritoneum was rendered immovable adhesions tended to form.

Dr. H. TORRANCE THOMSON and Mr. J. W. STRUTHERS contributed a paper entitled "Note on the Intratracheal Insufflation of Ether." Intratracheal insufflation consisted in driving a current of air under pressure through a tube introduced by way of the mouth and larynx deeply into the trachea. The current of air returned between the tube and the wall of the trachea and escaped through the mouth and nose. The current was continuous. The work of Meltzer and Auer had demonstrated that this insufflation of air into the trachea under adequate pressure ventilated the pulmonary alveoli and enabled the normal diffusion of gases to be carried out for many hours, independently of all respiratory movements. If the air in its passage under pressure were made to pass through a chamber containing ether they were enabled to introduce into the pulmonary alveoli ether vapour of varying strength. The points to which attention might be directed were as follows. 1. In ordinary respiration air had to be brought from outside through the nose, pharynx, larynx, trachea, and bronchi; from this point respiration consisted in an interchange of gases between the tidal and alveolar air by a process of diffusion. In intratracheal insufflation air was brought down to the bifurcation of the trachea with a certain force which favoured diffusion of gases, the long intervening air-shaft which had been termed the "dead space" being thus cut out. The practical importance of this was that there could be no interference with the free passage of air between the entrance to the mouth or nose and the trachea, an interference which was so frequently responsible for respiratory difficulties during anæsthesia. In addition, an excellent means for performing artificial respiration was always available. In their own experience at Leith Hospital the apparatus was used successfully in a patient who had attempted suicide by drowning and in whom respiratory movements had ceased. Artificial respiration was kept up for several hours by this apparatus, after which ordinary respiratory movements were re-established. 2. In intratracheal insufflation there was during the entire period a continuous current of air blowing forcefully from the trachea through the larynx, pharynx, nose, and mouth. It had been demonstrated in the laboratory and in actual practice that during insufflation it was impossible for blood, mucus, or vomited matter to enter the larynx, obviously a point of great practical importance in many operations. 3. By the constant maintenance of sufficient positive pressure collapse of the lungs might be prevented or regulated at will when the thorax was opened. In virtue of this, and because the method did not depend on the efficiency of the patient's respiratory movements, intratracheal insufflation of ether appeared likely to displace the elaborate negative and positive pressure cabinets and masks which had been devised for intrathoracic operations. The claims made on behalf of the method were based on the records of a large number of laboratory experiments carried out by Meltzer, Auer, and others, and on the observations of anæsthetists and surgeons in actual practice. Their experience was derived from the use of the method in about 100 cases. The cases were not specially selected, their object being to gain experience as quickly as possible and to acquire dexterity in the technique, so that special cases might have a fair trial. The series, however, included many cases which afforded opportunity to put the method to the test with regard to the special advantages claimed for it. To commence with, they used an apparatus made after the model described by Meltzer. It was inexpensive and efficient. For the greater number of operations they used the apparatus devised by Mr. Kelly, of Liverpool. This consisted of two parts, the first part being for the production of the air current; the second for the etherisation of the air. The electromotor actuated a rotatory blower which produced a current of air. The blower ran at the rate of from 50 to 1000 revolutions per minute. The ether apparatus consisted of an ether chamber, 12 cm. in diameter, metal lid, with entry and exit for air current, and a third opening for introduction of ether. The entry tube dipped down into the air space above ether for about 4 cm. Entry and exit tubes were interrupted by taps geared by cog-wheels to a third tap connecting both entry and exit. This permitted of variation in ether strength of air current from zero to full saturation. The preliminary administration of morphia 1/6 gr. and atropine 1/100 gr. had been the rule. In alcoholic subjects it would probably be an advantage to add scopolamine 1/100 gr. For the introduction of the catheter they used Hill's endoscope. The passage of the catheter was at first a matter of difficulty, but with practice it became comparatively easy. The important points to attend to were: (1) thorough relaxation before attempting intubation—the lower jaw should be so slack that a gag was not required; (2) the head should be hanging over the end of the table or in the occipito-shoulder position; (3) the epiglottis must be identified and the speculum passed sufficiently far below its tip that it will not slip (too deep insertion must be avoided); and (4) keep the speculum in the left hand and with a tilting movement of the hand lift the hyoid bone. The glottis then came into view and there should be no difficulty in inserting the catheter which should be made rigid by means of a probe. They used the silk-web white-enamelled cylindrical catheters. They stood boiling fairly well if care were taken not to leave them too long in the boiling water and if each catheter were wrapped in a piece of gauze so that it was not in contact with another catheter. The instrument was pushed nearly to the bifurcation of the trachea—a point in the adult about 26 cm. from the incisor teeth—the probe was withdrawn and connexion made with the air current. The size of the catheter varied with the build of the patient. In all but exceptional cases experience led them to believe that the maximum size should be 24 F., ranging downwards from this. Too large a catheter

interfered with the return current of air. Occasionally the tube had been passed into the œsophagus; this occurred several times in the earlier cases. With care and adequate relaxation such a mistake should not occur, but the possibility of it should be kept in mind. If the patient had been properly anæsthetised and the tube introduced without delay any glottic spasm which supervened should rapidly pass off. The degree of concentration of the vapour should not be too high too commence with, or irritation resulted, evidenced by spasm and coughing. The pressure should vary according to the case, from 10 up to 30 mm. Hg. The safety valve should be so arranged as to make any pressure above this impossible. In the majority of cases the course of anæsthesia had been perfectly smooth and uneventful—the colour remained a rosy pink, the pulse good, and the respirations quiet and regular. There was a noticeable absence of strain of all kind, the condition resembling natural sleep rather than narcosis. As a rule the anæsthesia was light and easily controlled by turning the regulator either towards full ether or air, and at any moment the ether could be turned off altogether, the apparatus being at once converted into one for performing artificial respiration. It was undesirable that the respiratory movements should be abolished altogether—their presence indicated that the respiratory centre in the medulla was not being overdosed with ether. At the conclusion of the operation, before withdrawing the catheter, it was well to flush out the lungs with air so as to remove any ether vapour that was present. This was accomplished by turning the regulator to air for a few minutes. In a few cases, notably in big alcoholic subjects, difficulty had been experienced in securing a sufficiently deep anæsthesia with good relaxation. In two of the authors' cases the attempt had to be abandoned and anæsthesia maintained by other methods. The attempt in such cases to give a more concentrated vapour had in their experience led to coughing and spasm. Probably, as previously suggested, the addition of scopolamine to the preliminary dose of morphia and atropine would be advisable, and it was particularly important to produce a deep anæsthesia in such subjects before commencing insufflation. There had not been any case of sickness during the insufflation. With such a limited experience to draw upon it was difficult to speak with any assurance regarding the question of shock. The absence of strain and the perfect aeration should certainly help to lessen shock, and the general opinion appeared strongly to favour the view that it did so. In their series there was one case of bronchitis occurring after an operation for goitre. In a few cases there was some hoarseness and complaint of sore throat, more marked in the early cases and possibly due more to clumsy introduction than to irritation from the intratracheal tube. There had been no case of pneumonia. After-sickness occurred in a certain proportion of the cases. It was generally held by those who had experience of the method that the amount of after-sickness was less than after ordinary inhalation anæsthesia. In estimating the value of this method it was in the first place to be remembered that it was essentially a method of maintaining anæsthesia; it did not touch the problem of satisfactory induction. The general conclusions to which one came might be briefly summarised. Provided a satisfactory apparatus was used and reasonable precautions were taken the method was a very safe one. The precautions referred to were concerned with such points as the skilful introduction of a properly-sized tube, the regulation of the pressure, and the maintenance of respiratory movement. In prolonged operations the method provided a quiet, even anæsthesia, with perfect aeration and marked absence of all strain. One was struck by the peaceful nature of the anæsthesia, the condition, as previously remarked, resembling a natural sleep rather than a narcosis. In abdominal operations the quiet respiration and the relaxation of the muscles of the abdominal walls made the method a very satisfactory one, especially in operations on the upper part of the abdomen. It promised to relieve the respiratory embarrassment which was sometimes seen during the course of anæsthesia in stout patients who were placed in the Trendelenburg position. In all operations about the mouth, such as those for excision of the upper jaw, antrum operations, or those undertaken for removal of naso-pharyngeal growths, any danger of aspiration of blood, mucus, &c., was removed, and the anæsthetist was well out of the surgeon's way. There was no interruption to the regular delivery of ether vapour, which was so liable to occur in such cases with ordinary methods. In operations for removal of glands in the neck or for mastoid disease the surgeon had the field to himself and was not hampered, nor was his asepsis endangered by the proximity of the anæsthetist's mask. In such operations as laminectomy and nephrectomy the postural difficulties with which the anæsthetist had to contend and which also tended to interfere with free respiration were eliminated. They had unfortunately not had the opportunity of testing the method in thoracic surgery. The opinion had been expressed that it would supersede the positive and negative pressure cabinets and greatly extend the possibilities of intrathoracic operations. In conclusion, while anxious to avoid making extravagant claims, they suggested that in intratracheal insufflation of ether they had a very safe method of maintaining anæsthesia which in properly selected cases offered great advantages, and that the method deserved to take its place alongside of other methods at the disposal of the anæsthetist.—The paper was discussed by Dr. J. S. ROSS, Dr. T. M. BURN-MURDOCH, Professor F. M. CAIRD, Dr. O. C. BRADLEY, and by Mr. A. A. SCOT SKIRVING.—The authors briefly replied.

ROYAL ACADEMY OF MEDICINE IN IRELAND.

SECTION OF OBSTETRICS.

Exhibition of Specimens.—Report of the Rotunda Hospital.

A MEETING of this section was held on May 22nd, Dr. M. J. GIBSON, the President, being in the chair.

Dr. H. JELLETT showed a Uterus removed for concealed accidental hæmorrhage from a patient aged 25 years. This was her sixth pregnancy. The previous history was one abortion, one premature, and three full term, all with normal labours. On the day of admission she had some hæmorrhage, and was plugged by a medical man before being sent into hospital. When admitted she looked fairly well, with a pulse of 104. The plugs were removed, and as there was no subsequent hæmorrhage the patient was left alone. After three hours a little blood came from the vagina, and the patient was emphatic that the uterus had got much larger. It was then nearly up to the ensiform cartilage. She was extremely anæmic and appeared not to be able to stand any loss of blood. Examination showed the membranes presenting through the cervix, and as the conclusion had been formed that the patient could not afford further loss of blood and was suffering from concealed accidental hæmorrhage the abdomen was opened and the uterus removed. Everything went on satisfactorily afterwards. Examination of the specimen showed that the diagnosis was right.—Sir WILLIAM SMYLY said that the specimen was, so far as he knew, unique, and suggested that it ought to be put up in a permanent form. He had no doubt that the treatment described was correct. He agreed that uterine hæmorrhage could always be stopped by removing that organ, and thought it was perfectly right to do so if the hæmorrhage could not be stopped in any other way.—Mr. SPENCER SHEILL said the operative treatment was undoubtedly correct. In spite of the blood pressure at the site of the blood clot the wall was thicker there than on the other side, and he therefore suggested that although the treatment carried out was the correct one plugging might also have been satisfactory.—The PRESIDENT referred to his experience in five cases of severe concealed accidental hæmorrhage. In every case a certain amount of blood had escaped externally, the uterus had increased in size, was hard and tender, and the patients' condition could not be accounted for by the amount of blood lost externally, nor by any other acute abdominal attack. He considered that the hæmorrhage in these cases could not be controlled either ante-partum or post-partum except by hysterectomy. When such a rapidly over-distended uterus was emptied, post-partum hæmorrhage led to the death of the patient.

Mr. SHEILL showed a specimen of Tuberculous Tubes removed from a patient who was married five years, had no pregnancy, and enjoyed fair health. She developed symptoms of endometritis, and curettage was carried out by a medical man with no good result. When Mr. Sheill was

consulted he diagnosed tumour and recommended immediate operation. The two specimens shown were removed, one consisting of the right tube and ovary and the other of the right tube only. He spared the second ovary, with the intention of suturing it to the cornu of the uterus, but it was found adherent to the back of the uterus, and he was obliged to leave it. A point of interest was that the patient's sister consulted him seven years ago, and he diagnosed tuberculous tubes, and advised operation, which was refused, and she died from consumption two years ago.—Dr. GIBBON FITZGIBBON said that he did not altogether agree with Mr. Sheill's method of treatment of tuberculous tubes. In a somewhat similar case he cleared out the pelvis, taking tubes, ovaries, and uterus, as he did not see how one could expect the tuberculous disease to be restricted to the tubes alone. He considered it better for the patient to clear out the uterus in order to avoid the risk of leaving tuberculous infection in the uterus. He was reluctant to try conservative operations in tuberculous disease of the tubes where it was so extensive as in the specimen shown.—Sir WILLIAM SMYLY said he agreed with Mr. Sheill in leaving the ovary. Pelvic tuberculosis, he believed, had never been proved to be primary. It was looked upon by the best pathologists to be always secondary, and at the meeting of the German Gynæcological Association in Munich it was positively stated by the reporters that such a thing as a primary pelvic tuberculosis had never been met with—i.e., if a thorough examination of the patient's body was made one would certainly find tuberculosis in some other part. He did not, therefore, think that by taking out the tubes the patient would be prevented from getting pulmonary tuberculosis. The removal of the tubes when full of pus was absolutely necessary for the health of the patient, but he did not consider it necessary to remove the uterus, ovaries, or other organs. The direction in which the infection spread was always downwards, and it never extended along the mucous membrane upwards, but always in the direction of the stream. It was therefore an infection from the blood and not from the air. —Dr. JELLETT agreed with Mr. Sheill as regards saving the ovaries, but at the same time he considered pelvic tuberculosis was most dangerous. Within the last six months he had seen a great deal of pelvic tuberculosis. If operated upon it offered a good prospect of cure, but when not operated upon it led to serious results. In a case on which he had operated recently the patient had no symptoms, but had a very large necrotic mass lying in Douglas's pouch behind the uterus with complete destruction of the appendages.—Dr. R. J. ROWLETTE said that they were not in a position to judge what proportion of cases of tuberculosis of the genital organs became dangerous, and from the results of post-mortem examinations the question seemed to be similar to that of tuberculosis of the lungs. It might be concluded regarding pelvic tuberculosis as with pulmonary that a very considerable proportion of cases got better without treatment, but it was true that the disease in a certain number of cases became dangerous to life. Referring to treatment, it was not the custom to try to eradicate the disease by the knife in other parts of the body, and he did not see why this should be attempted in the pelvis. It was almost certain that when tuberculosis was found in one part of the body it was also present in another. He could not agree that in a case of pelvic tuberculosis one would be justified in clearing out all the pelvic organs, and even if it were necessary to remove the uterus it would scarcely be necessary to remove the ovaries, as it was rarely found that any traces of tuberculosis existed upon the surface of the ovary.—The PRESIDENT said that pelvic tuberculosis was a disease which generally tended to become cured. Examination of a considerable number of tubes which he had removed showed that the great majority were inactive. In cases of tuberculosis of the endometrium he had advised sanatorium treatment with good results. If he were called upon to treat a patient with tuberculous tubes and decided on operation he would not remove more than the tubes if possible.

Dr. JELLETT, in introducing the Clinical Report of the Rotunda Hospital for the year ending Oct. 31st, 1913, said that during the year 2124 patients were delivered under the care of the hospital in its extern department and 2311 patients were admitted to the maternity wards. Of the latter number 299, who were not in labour, were discharged undelivered and 2012 were delivered. Thus, a total of 4136 labours in all were attended by the hospital staff. The principal event of the year was the complete renovation and rebuilding of the students' residence. The result was a most comfortable and commodious residence. There were 12 cases of unavoidable hæmorrhage and 24 cases of contracted pelvis during the year. There were 13 cases of prolapse and presentation of the cord. There were only 5 cases of eclampsia during the year. The forceps were applied in 64 cases. Cæsarean section was performed seven times, in every case the indication being contracted pelvis; in 3 cases it was performed for the second time, and in 1 case for the third time. The morbidity rate of the hospital, as estimated by the standard of the British Medical Association, was 1 in 16·45. The assistants had tested systematically and carefully the action of pituitary extract on the uterine contractions. During the year 585 patients were admitted to the gynæcological department, 463 operations were performed, and the total mortality was 8—i.e., 1·73 per cent. In 40 cases hysterectomy was performed, with 38 recoveries. This number included 6 cases of Wertheim's radical hysterectomy. In 31 cases abdominal myomectomy was performed, with 1 death. Twenty-five operations were performed for genital prolapse.

SOCIETY OF MEDICAL OFFICERS OF HEALTH.—The annual provincial meeting of this society was held in Glasgow on May 30th, Dr. A. K. Chalmers, the President, being in the chair.—Professor Matthew Hay opened a discussion on Public Health Research. After referring to the great advances which had been made in medicine during the last half century, he dealt with those more particularly connected with hygiene. The world was now realising as never before how much humanity owed to those advances, and the British Government had begun in recent years to take some real interest in medical science. Following upon certain grants for important special researches, such as those conducted by the commissions or committees on tuberculosis and certain occupational diseases and tropical diseases, it had recently done a wise act in providing some £60,000 for the encouragement and assistance of medical research. Comparatively it was not a large amount, but it was a substantial contribution, and there was some reason to hope that it might increase in future if the work accomplished justified the expenditure. The grant would not be devoted exclusively to investigations in tuberculosis, for an endeavour would be made to assist all kinds of research, whether in curative or preventive medicine. He referred with satisfaction to the proposal of the Government to devote a considerable sum to the provision and maintenance of laboratories for the assistance of medical practitioners in methods of diagnosis and treatment, and presumably also for the assistance of the public health service. One of the first things to be considered would be whether an effort should be made to utilise existing laboratories connected with teaching institutions or hospitals or whether the work was to be mainly or exclusively carried out in laboratories specially provided for the purpose. He was disposed to favour the view that as a rule the latter course should be adopted. It was essential that the laboratories wherever situated should have thoroughly skilled heads with adequate assistance, and a sufficiency of accommodation and equipment. Not only should routine work be carried out, but time should be given to research work bearing on the practical problems of health administration. For many years past the public health service had been attracting to its ranks a very large proportion of the best medical graduates. These men received in the course of their training for their Public Health degree or diploma considerable insight into laboratory work, and they would be keen on assisting to the full the resources of any laboratories with which their public health department might be associated. It was very desirable that statistical investigations should be more fully and more exactly employed in connexion with Public Health administration. It was very difficult for anyone to deal statistically with medical data unless he had a reasonably full knowledge of the value and qualification of such data and of their possible correlatives. Simple arithmetical methods were often sufficient to evolve from the data their more important lessons in the selection of the correlatives. The men in the thick of the actual work should be the most competent judges. Nevertheless, health officers would welcome

the advice and assistance of expert statisticians, and it would be a great advantage if the services could be made available of the statistical department which the Medical Research Committee had decided to establish. There was little within the province of medical science that did not appeal to public health officers and might not have a bearing on the efficiency of health administration. Among problems which had yet to be solved were the causal organisms of some of the more common diseases, such as measles, scarlet fever, and small-pox, though such discoveries were not likely to fall to officers whose duties were so largely administrative, but there remained much regarding the apparent habits and modes of conveyance of infective organisms in general that they could materially assist in ascertaining. The vehicles and channels of infection still called for extended investigation and careful observation in the future. The views as to aerial infection had been revolutionised within the last 30 years. Once almost every zymotic disease was thought to be possible of conveyance through the atmosphere, and sanitary methods were framed accordingly. Now those who were more daring ventured to treat almost all kinds of cases together in a common ward, separated from each other only by a bit of tape. The investigations of the rôle of the insect both biting and non-biting still remained charged with potentialities. Professor Hay suggested that the Society of Medical Officers of Health might appropriately appoint a committee to consider the subject of research with a view to a feasible selection and to standardisation of methods of inquiry, as well as to the suitable local distribution of the inquiries.—Sir Shirley F. Murphy considered that Professor Hay had done a service to the public as well as to the society by insisting upon the need for exact research. He referred to the excellent work which Dr. Chalmers and his staff were doing in the investigation of the behaviour of pulmonary tuberculosis.—Dr. Helen MacMurchy (Toronto) expressed the hope that there would in future be paid much more attention to the investigation of the causes of infantile mortality.—Dr. W. Gemmell, Dr. T. F. Dewar, Dr. J. R. Currie, and the President also took part in the discussion.

BRADFORD MEDICO-CHIRURGICAL SOCIETY.—A meeting of this society was held at the Royal Infirmary on May 19th, Dr. J. F. Sykes, the President, being in the chair.—Dr. T. Jason Wood showed: (1) Solid Ovarian Tumour complicating Pregnancy; and (2) Foreign Body embedded at Root of Tongue.—Dr. A. Little exhibited Struychen's Direct Laryngoscope.—Dr. F. W. Eurich read a paper on Some Cases of Lead Poisoning. He said that he had recently come across an unusually large number of atypical cases of lead poisoning. None had been found in the city of Bradford, but many in the outlying districts, Clayton, Wibsey, Low Moor, Idle, Yeadon, Esholt, Shipley, and Queensbury, where the water-supply was not the same as in the centre of the city. In most of the cases there was no lead line, and abdominal pain was present. A boy aged 11 years showed paraplegia and anæmia; a laundry girl had unilateral wrist-drop; a man aged 40 had anæmia and a sudden attack of paraplegia followed by coma, optic neuritis, and, as frequently occurred, basophil granules in many of the red cells of his blood. Two cases had been mistaken for appendicitis. Dr. Eurich advised an inquiry into the water-supply, since in all cases he had found lead in the drinking water. Inquiry, he thought, should be made into the relation between this disease and rickets, and into all cases of optic neuritis, appendicitis, and abortion. He himself was conducting experiments along these lines, and would place them before the society at a later meeting.—Dr. J. J. Buchan suggested that the pressure in the high-level pipes might have some influence on the solution of lead.—The paper was discussed by the President, Dr. S. Lodge, Dr. A. Tomlinson, Dr. A. Bronner, and Dr. A. Manknell, and Dr. Eurich replied briefly.

A LONG MEDICAL APPOINTMENT.—At the last meeting of the Axbridge (Somerset) board of guardians Dr. Frederick St. John Kemm, medical officer for the Worle district, resigned after 30 years' service, and the guardians expressed high appreciation of his long and signally successful discharge of the duties and unfailing consideration of the poor.

Reviews and Notices of Books.

Diseases of the Heart.

By JOHN M. COWAN, D.Sc. Glasg., M.D. Cantab., F.R.F.P.S. Glasg., Professor of Medicine, Anderson's College Medical School; Physician, Royal Infirmary; Lecturer in Clinical Medicine in the University, Glasgow. With chapters on the Electro-Cardiograph, by W. T. RITCHIE, M.D. Edin., F.R.C.P. Edin.; and the Ocular Manifestations in Arterio-sclerosis, by ARTHUR J. BALLANTYNE, M.D. Glasg., F.R.F.P.S. Glasg. London: Edward Arnold. 1914. Pp. 438. Price 15*s.* net.

THE great advances which have been made in our knowledge of the diseases of the heart and arteries during the last ten years have necessitated a considerable review of the literature of the subject. Former treatises have had to be revised and many new works have been written. New methods of histological technique and the employment of the sphygmomanometer, the polygraph, and the electrocardiograph have elucidated many problems and yielded information of great value to the physician.

In the volume now before us Dr. Cowan has reviewed the subject of diseases of the heart in the light of recent investigations, and has presented to the practitioner the bearings of the results which have been obtained upon the practical work of diagnosis, prognosis, and treatment. Diseases of the myocardium are first considered, and a good account is given of the various forms of degeneration which may affect the cardiac muscle. Diseases of the arteries are next discussed, together with the symptoms which may manifest themselves. Caution of a practical nature is given as to the deductions to be derived from an estimation of blood pressure—namely, that this pressure rises to a considerable extent in the healthy individual from causes of a temporary and often trivial nature, the influence of which cannot always be accurately gauged; unless care be taken in studying all the aspects of each case fallacies may easily arise in distinguishing between a temporary physiological rise and a permanent morbid increase.

The chapter on nodal rhythm is rather involved and difficult to follow, but those on contractility and conductivity are well worthy of attention. It is pointed out that defective conduction is generally associated with gross lesions of the *a.-v.* bundle, but it is also admitted that there is some evidence which suggests that functional defect may exist without gross lesion of the bundle. In discussing the prognosis of heart-block Dr. Cowan expresses the opinion, which will meet with general support, that chronic full heart-block is not incompatible with many years of fair health, and that a partial block may become complete or may pass away.

The subjects of auricular flutter and auricular fibrillation receive due notice, and many electrocardiographic tracings are given in illustration of the letterpress; the symptomatology, diagnosis, and treatment of chronic valvular disease are considered at some length, and in the light of modern research. An account of the ocular manifestations in arterio-sclerosis is contributed by Mr. A. J. Ballantyne, and Dr. W. T. Ritchie is responsible for a chapter on the electrocardiograph.

The work is admirably illustrated by diagrams and many well-executed drawings of morbid conditions of the heart. Physicians who are especially interested in the study of diseases of the heart

will find much material of value in the book. The number of illustrative cases is one of the features of the work, and Dr. Cowan has evidently devoted much care and attention to the preparation of a learned treatise on cardiac disease.

Die Prognosenstellung bei der Lungentuberkulose.

Von D. O. KUTHY und A. WOLFF-EISNER. Berlin: Urban und Schwarzenberg. 1914. Pp. 672. With 21 illustrations. Price, paper, 18 marks.

THE difficulties attending the formation of a just prognosis in tuberculosis of the lungs are well illustrated by the great size of this German textbook devoted to that subject alone. In it are discussed over 400 various chief considerations that may influence the prognosis in a favourable or an adverse sense. They are distributed under three main headings—namely, the past history of the patient, his physical signs on examination, and the action of therapeutic agents upon him. Over 1000 references to the literature are given, and the volume has a good index. It is a collection of information, well written and arranged, and may be warmly commended to the attention of all medical men as well as those who are particularly interested in pulmonary tuberculosis.

The Diseases of Children.

By Sir JAMES FREDERIC GOODHART, Bart., M.D. Aberd. Tenth edition. Edited and revised by GEORGE FREDERIC STILL, M.D. Cantab. London: J. and A. Churchill. 1913. Pp. 959. Price 16*s.* net.

A BOOK which has gone through ten editions requires scant attention on the part of the reviewer. There can be but few well-equipped medical men in this country who do not possess a copy of this standard work, and so closely does each succeeding edition keep abreast of the times that it is exceedingly improbable that the next generation of practitioners will have to look elsewhere for their information on the subject of the diseases of children.

In his preface to this new edition Dr. Still explains that the work of revision has been shared by Sir James Goodhart, that some of the additions are his, and that all alterations have been submitted to his approval. Several new illustrations have been added, and the chapter on anterior poliomyelitis has been entirely rewritten. For the rest the volume remains very much as in former editions, and, thanks to the reviser's skill, it still retains the original author's freshness of style. The chapters which relate to rheumatism and rheumatic conditions will be read with interest by those who are familiar with Sir James Goodhart's views on these subjects, and in this new edition the skill with which the older theories of the rheumatic and convulsive diatheses are reconciled with the more modern findings of the bacteriologist reflects infinite credit on the acumen of the reviser. It is possible that the adoption of the German classification of such convulsive phenomena as spasmus nutans, eclampsia infantum, laryngismus, and tetany under the single generic title of spasmophilia would have made these different subjects more comprehensible to the average student. Chorea and rheumatism are discussed in consecutive chapters, while rheumatoid arthritis, chronic arthritis with enlargement of the glands and spleen (Still's disease), and gout are included in the chapter on rheumatism. The chapter on abnormalities of development includes excellent descriptions, with illustrations, of the somewhat rare conditions, achondroplasia, cleidocranial dysostosis, and oxycephaly.

This new edition retains all the merits of its predecessors without any material sacrifice of conciseness. It may be safely commended to the notice of both students and qualified practitioners as a work which thoroughly represents the best teaching on the subject of the diseases of children.

Lehrbuch der Organotherapie mit Berücksichtigung ihrer Anatomischen und Physiologischen Grundlagen.

Edited by WAGNER v. JAUREGG and GUSTAV BAYER. Leipzig: Georg Thieme. 1914. Pp. 516. Price 13 marks.

AS is pointed out in the preface to this book, the discovery of the physiological activity of the thyroid gland and of the possibility of using preparations of its substance for therapeutic purposes was followed by a period of uncritical enthusiasm in which similar effects were expected and even stated to follow the administration of extracts of many other organs, and these were recommended for the treatment of a heterogeneous collection of diseases. Such indiscriminate medication was naturally followed in turn by a revulsion of feeling in which the whole subject of organotherapy fell into disrepute, and we are only gradually learning to sift the true from the false and to ascertain the real limits of this form of treatment. The book before us gives a useful account of the work that has been done in this field. It is written from a practical point of view, and is intended for the practitioner of medicine in search of guidance in the treatment of disease, although the scientific side of the questions dealt with is very fully discussed.

The first section, written by Dr. M. Höfler, gives a historical account of the development of knowledge of the use of extracts of various organs in medicine, the earliest traces of which may perhaps be seen in the idea that devouring such things as the heart of a savage animal would confer on the eater the quality of courage, and so forth. Curious customs, such as totemism and theophagy, are incidentally discussed. The second section, on the morphological basis of organotherapy, by Professor Alfred Kohn, treats of the anatomy and histology of the organs that are supposed to possess internal secretions, and is illustrated by numerous cuts. The individual organs are then taken up in successive sections, the thyroid gland, about which we have much the most certain knowledge, being dealt with by Professor v. Jauregg, and the parathyroids by Professor F. Pineles. Removal of the latter "epithelkörperchen" produces tetany, but their administration as a remedy seems of no value, though transplantation in animals may be successfully carried out. The thymus gland, dealt with by Dr. Karl Basch, is an interesting organ developmentally, the nature of its cells being somewhat obscure. Removal of it in young animals seems to lead to defective development of the bones and sometimes to defective sensibility, cachexia, and death in coma. The value of thymus preparations, which have been tried in Graves's disease, rickets, and other affections, remains doubtful.

The pituitary body or hypophysis is the subject of a section written by Dr. L. Borchardt. The gland consists of two parts, the anterior and posterior lobes, each possessing a different structure, and the physiology of the whole is not well understood. Disease of the hypophysis is associated on the one hand with acromegaly, possibly due to increased functional

activity, and on the other with increased deposit of fat accompanied by defective development of the generative organs (dystrophia adiposo-genitalis), said to indicate diminished internal secretion. An appendix to this section is devoted to the pineal gland, to which an internal secretion has recently been attributed, although morphologically it seems to represent a median eye-rudiment. Lesions of this body are associated with increased growth and genital precocity. The pancreas, which is chiefly of interest in connexion with diabetes, is treated of by Dr. R. Ehrmann, and the suprarenal bodies by Dr. G. Bayer. In spite of the discovery of adrenalin and of its later synthetic reproduction the physiology of the adrenals is not very clear. The double structure of the glands, which possess a cortical and a medullary portion of quite different histological appearance, complicates the question as to their function in the body, while the association of Addison's disease with visible lesions now in one, now in the other, portion increases the difficulty. The organotherapeutical relations of the genital organs are discussed by Dr. A. Foges, and a concluding section by Dr. Bayer collects together a mass of information on the possible value of extracts from other organs and tissues, such as liver, bone marrow, kidney, spleen, and so forth.

The treatment of the subjects throughout is very full and thorough, and much pains have been taken to make the account of recent investigations in this field complete. We recommend the book to all who are interested in the subject of organotherapeutics, either theoretically or practically.

Therapeutics, Dietetics, and Hygiene: An Australian Text-book.

By JOHN WILLIAM SPRINGTHORPE, M.D. Melb., M.R.C.P. Lond., Senior Physician to the Melbourne Hospital. In two volumes. Vol. I.: Hygiene and Dietetics. Melbourne: James Little. 1914. Pp. 604. Price 25*s.* net per volume.

THE real interest and value of this book lie in the special information on hygiene as related to life in Australia. The dietetic habits and food-supply of the various districts and cities of the Commonwealth are reviewed and criticised; there are some excellent chapters on dietetics in general in which the author takes up a broad and confident standpoint, in marked contrast to much that has been written in other parts of the world. The account of the chemical classification of foods is unequal, for of seven pages five are devoted to fats and lipoids, but we may add that the account given of these important bodies is very sound. The survey of modern theories on dietetics is one of the best sections in the book, though here there is no pretence at any originality. In the course of describing methods of indicating food values reference is made to the ingenious balance devised by Irving Fisher for arranging accurate diets rapidly.

Medical officers of health and "publicists" will find a mass of interesting material in other chapters, which deal with regulations in force in the various areas of Australia, but we could have wished for more information on that important question of to-day, the extent and certification of venereal disease, in the light of the experience of these colonies.

Though there is much that is of interest in this volume, it hardly fulfils the requirements of a "text-book" of hygiene either for a student or for a practitioner. The more important parts of the practical chapters on public health may be found in the works of Parkes, and Thresh and Porter, and such subjects as the examination of water-supplies had far better be studied in the original books. Instruction here should be very precise, and the gaps in the information supplied in this book are conspicuous. Thus in the consideration of the softening of water the Porter-Clark process is mentioned, but there is no hint as to the nature of the process. Again, in treating of the examination of sewage and sewage effluents reliance is placed entirely on the "soloid" tests.

This is a meritorious book, possessing many good qualities and providing much useful information. We have indicated a few directions in which improvements may be made in any future issues.

Taschenbuch für Frauenheilkunde und Geburtshilfe.

Von L. JANKAU. Vierte umgearbeitete und vermehrte Auflage. Leipzig: Repertorienverlag. 1914. Pp. 354. Price 7 marks.

THIS forms really an encyclopædia containing an immense amount of statistical and other information. The first part deals with the anatomy and physiology of menstruation, pregnancy, labour, and the new-born child. The second part deals with various methods of examination, both clinical and microscopic. The third part deals with clinical facts of all kinds, and the fourth with treatment. The whole is a collection of useful facts in an easily accessible form in connexion with the subject of diseases of women and midwifery. As a reference book it certainly should prove most useful.

Industrial Poisoning from Fumes, Gases, and Poisons of Manufacturing Processes.

By Dr. J. RAMBOUSEK. Translated and edited by THOMAS M. LEGGE, M.D. Oxon., D.P.H. With illustrations. London: Edward Arnold. 1913. Pp. 360. Price 12*s.* 6*d.* net.

THE continental countries, especially Germany, afford a most instructive field of study as to the administrative measures in force there in regard to industrial diseases and factory hygiene, and H.M. Medical Inspector of Factories in this country, Dr. T. M. Legge, has done a good service in presenting in the English language this work by Dr. J. Rambousek, the professor of factory hygiene and chief state health officer at Prague. As Dr. Legge points out, Dr. Rambousek has peculiar advantages in dealing with this broad and important subject, since he is a medical man, a chemist, and a Government official having control over industrial matters. He is therefore equipped with the very special knowledge required to describe the manufacturing processes giving rise to injurious effects, the pathology of the lesions set up, and the preventive measures necessary to combat them. In these few sentences the scope of the book is summed up, as will be seen from a consideration of the subjects dealt with in the three parts into which it is divided.

Part I. gives a description of the industries and processes attended with risk of poisoning, and the incidence of such poisoning is discussed. Part II. relates to pathology and treatment of industrial poisoning, and Part III. to preventive measures against industrial poisoning. The field covered is remarkably wide having regard to the size of the volume, and the descriptive chapters show how

thoroughly studied and carried out are the regulations abroad which are framed to safeguard the health of the workers in the dangerous occupations described. We could not find any omissions. Even the cigar industry is included in the category of a dangerous trade owing to the injury to the health of tobacco workers caused by dust and fumes unless special methods of ventilation are adopted. There is a very serviceable appendix attached which contains a wealth of references.

The book is a valuable addition to the literature of dangerous industrial occupations, and is most interesting reading, whether the reader is or is not directly concerned with the subject.

Klinik der Nervenkrankheiten: Ein Lehrbuch für Ärzte und Studierende.

Von Dr. LEO JACOBSOHN. Mit 367 Abbildungen im Text und 4 Tafeln in Farbendruck. Berlin: August Hirschwald. 1913. Pp. 488. Price 19 marks.

THE author states that his object in writing this text-book for physicians and students is the production of a compendium of clinical neurology in which theoretical considerations are to be kept in the background, while only an irreducible minimum of pathological anatomy is to find a place. With this end in view the clinical aspects of nervous disease have been emphasised by the incorporation of a large number of unusually fine photographs; nervous diseases rather lend themselves to illustration in this way. It is true that the importance of the subjects illustrated is somewhat unequal, for rare anomalies, such as syndactyly, polydactyly, and muscle agenesis, are exemplified, while there is, on the other hand, for a text-book a poverty of diagrams.

In his task of supplying a useful and practical manual of clinical neurology the author has been very successful. If there are no particularly profound studies of any of the diseases dealt with, his handling of his material is uniformly sound. The teaching value of the book is considerable. The first part is taken up with methods of investigation, general symptomatology, and the principles of treatment. The second part consists of a systematic description of diseases of the peripheral nerves, the spinal cord, brain, meninges, followed by the neuroses, diseases of the vasomotor and sympathetic systems, diseases of the ductless glands, and other morbid conditions. The absolute rarities of neurology are omitted, but we should think the practitioner will not find the book wanting in regard to any nervous symptom he is likely to come across in the course of general medical work.

LIBRARY TABLE.

Palissy, Bacon, and the Revival of Natural Science. By Sir THOMAS CLIFFORD ALLBUTT, K.C.B., F.R.S. A paper read at the International Historical Congress, April, 1913 (from the Proceedings of the British Academy, Vol. VI.). London: Published for the British Academy by Humphrey Milford, Oxford University Press. Pp. 15. Price 1s. net.—Bernard Palissy shares with Robert Bruce's spider the honour of being an example to youth of the benefits of perseverance. Every well-instructed child has heard the story, as told by Palissy himself, of his struggles to produce finely glazed ware, with ornament in high relief, of his many failures, of his poverty, and finally how he burned the wretched furniture of his poor home to keep his furnaces going, and achieved success. But few persons, even those who are well read, know that Palissy was a really learned chemist and student in various branches of physical science, that he studied geology, and arrived at very sound conclusions with regard to the earth's history. His "Discours Admirables" are astonishing documents for the date (1580) at which they were published. Sir Clifford Allbutt, in the paper now before us, gives a résumé of the contents of Palissy's "Discours," of the lectures he gave (1575-1584) on geology and agricultural chemistry, and of the museum which he had organised wherewith to illustrate his lectures. Not only fashionable Paris but the leaders in science of the time attended his lectures, and at p. 329 of the edition of his works published by Charavay Frères (Paris, 1880) we find a list of them. First come 13 doctors of medicine, beginning with Maistre François Choisnyn and Monsieur de la Magdalene, physicians to the Queen of Navarre, then Alexandre de Campège, physician to Monsieur the Brother of the King. Next come the surgeons to the King, headed by the illustrious Paré, and after these a numerous throng of ecclesiastics, lawyers, and other learned persons, including Maistre Michel Saget, delightfully described as "homme de jugement et de bon engin." Palissy, his museum, and his lectures give occasion to Sir Clifford Allbutt to propound the interesting theory that Bacon, who went to Paris in 1576 with Sir Amyas Paulet, must have attended Palissy's lectures, and so was led to that study of direct investigation of Nature by facts which he later developed into the Instauratio Magna. It is true that Bacon nowhere mentions Palissy, but, as Sir Clifford Allbutt reminds his readers, Bacon was not the sort of man to mention that he had had friendly intercourse with one who like Palissy lay under suspicion on account of his revolutionary views, both religious and scientific.

The Anatomist's Notebook: A Guide to the Dissection of the Human Body. By A. MELVILLE PATERSON, M.D. Edin., F.R.C.S. Eng., Professor of Anatomy in the University of Liverpool. London: Henry Frowde and Hodder and Stoughton. 1914. Pp. 351. Price 6s. net.—Professor Paterson has done wisely in naming his volume a "notebook." It is an aid to dissection, and can be regarded as a useful substitute for the student's working notebook, but it would be a mistake to regard it as more than that, and to attempt to make it supplant any of the ordinary dissecting manuals. The author himself says that its use should "be supplemented by means of a knowledge of osteology and by means of a systematic text-book," and until the staff of demonstrators is enormously increased in our anatomical departments, or a far more self-reliant generation of students arises, it will be impossible to carry on dissections properly without the aid of one of the current manuals. As a notebook it is worthy of all praise; its outline drawings are excellent; its text is very brief, and it is freely interspersed with blank leaves for the dissector's own notes and sketches. There is no doubt that the student who adds this notebook to his working outfit will be all the better for its conscientious use. The nomenclature is that familiar to most medical students, and but few new terms are used.

JOURNALS AND MAGAZINES.

Archives de Médecine et Pharmacie Navales.—In the March number Dr. Plazy, staff surgeon in the French Navy, relates his experiences with salvarsan and neosalvarsan. He has treated 80 cases with 700 or 800 intravenous injections. As salvarsan is rapidly excreted (arsenic appears in the urine in 15 minutes and has ceased to be demonstrable

within 48 hours), Dr. Plazy repeats injections with only two or three days' interval, and he gives many injections to each case, usually nine or ten within three or four weeks. He begins with 0·3 grm. and gradually increases to 0·9 grm. For infants and very stout patients he recommends that neosalvarsan be administered by enema, in doses of 2½ to 5½ grm. These injections in no way irritate the rectal mucosa, and appear to be readily absorbed, since the Wassermann reaction has been found negative soon after them.—Dr. Bouthillier and Dr. Goéré, staff surgeons in the French Navy, observing that Dr. R. S. Frew and Dr. A. E. Garrod reported in THE LANCET of Jan. 4th, 1913, cases of glycosuria during tuberculous meningitis, give an account of a case of pneumococcal meningitis which showed glycosuria on the first day, and excreted 457 grains of sugar during the second day. Lumbar puncture was then done and 30 c.c. of fluid under pressure were taken away. 20 c.c. of antimeningococcus serum being injected, the patient at once began to improve, passed no more sugar in his urine, and steadily recovered.—The sanitary precepts issued to the Italian expeditions in Libya are discussed. It is interesting to find that the drinking of even small quantities of wine is strongly discouraged in the Italian navy, histories being given of an expedition that failed through sickness when sutlers and wine-sellers followed the troops, and of another that succeeded, though more arduous, when all camp followers had been turned back. The importance of personal cleanliness and of the burying of excreta is effectively put before the sailors.

The Child.—The first article in the April issue of this journal is one by Dr. J. F. Halls Dally on Biometric and Eugenic Studies of Elementary School Children, based on the results of a detailed examination in the course of medical inspection for the London County Council of 975 children at the Jews' Free School, Bell-lane, London, E. The results of Dr. Dally's investigations are interesting. Other articles are Heredity and Education, by Professor Peter Sandiford, of the University of Toronto; Eczema in Children and its Treatment, by Dr. J. L. Bunch; and Child Welfare in Relation to Tonsils and Adenoids, by Dr. C. A. Adair Dighton.

Tumori. Archivio bimestrale fondato da G. Fichera. Roma, April 10th, 1914. Anno III. Fasc. V.—The last number of this publication contains several interesting articles. Dr. Fichera himself discusses new growths having the same structure as sympathetic nerve tissue. According to the nomenclature adopted by the Brussels International Commission of August, 1913, the name of the tumour described by him would be "myelinic gangliocellular neuroma." The tumour is retroperitoneal in origin, springing from the lumbar sympathetic. It occurred in a girl aged 15 years, and was diagnosed as a retroperitoneal fibro-sarcoma. After removal it weighed 550 grammes, was oval in form, its diameters being 13 and 11 centimetres.—Dr. Izar and Dr. Ferro continue their researches on antigens for the meiostagmic reaction in malignant tumours, experimenting with the esters of mannite and cholesterine.—Dr. V. Saviozzi draws attention to the intestinal symptoms associated with renal tumours. These are always present during the existence of renal tumours, and depend on the compression that the tumour exerts on a lengthy portion of the descending colon. This compression takes place gradually and slowly and increases progressively *pari passu* with the intensity and extent of the pressure exercised on the colon. The symptoms are those of progressive intestinal stasis.—Dr. A. Cimoroni discusses chronic mastitis and benign tumours of the mamma in a lengthy article on 61 cases observed at Professor Bastianelli's clinic at the Policlinico at Rome. They consisted of 14 cases of chronic mastitis, 1 of hypertrophy, 11 of cystic and 35 of solid tumours, and form a most interesting series of cases.

The Candid Quarterly Review of Public Affairs: Political, Scientific, Social, and Literary. Conducted by THOMAS GIBSON BOWLES. London: Henry Garratt. Price 5s. net. Subscription £1 per year, post paid to any part of the world.—The second number, dated May, 1914, of this new quarterly review, lies before us. It contains 15 unsigned but well and weightily written articles on matters political, economic, and military. There is nothing in this issue of especial interest to medical men as such, and the natural sciences are represented only by an article on the weather and its prophets, in which the growth and trend of present investigation into the data for a science of weather-lore are described. The character of most of the articles, unhampered by any appeal to the authority of a name, indicates that while they are open to contention they are for the most part by a writer or writers equipped with a wide study of the respective subjects and endowed with a power of original thought.

British Dental Journal.—Dr. N. N. Znamensky in the May 15th issue contributes a paper on the Causes of Alveolar Pyorrhœa. The changes occurring in the bone he describes as an osteoporosis, and he considers that the lesion either may develop in the bone itself or may be secondary to pathological changes in the gum around the tooth. He considers that arterio-sclerosis plays an important part in the development of alveolar pyorrhœa. Mr. H. Dewe Mathews contributes a "Note on the Present Treatment of Pyorrhœa." An abstract of the preliminary programme of the Sixth International Dental Congress appears in this issue.

BATH MINERAL WATER HOSPITAL:
THE NEW PATHOLOGICAL LABORATORY.

ON the afternoon of Thursday, June 4th, Sir William Osler, Regius Professor of Medicine in the University of Oxford, opened, in the presence of a representative gathering, the new pathological laboratory which has recently been established at the Royal Mineral Water Hospital of Bath. The Rev. C. E. B. Barnwell, President of the hospital, took the chair, and in his introductory remarks gave a succinct account of the history and growth of the hospital since its foundation in 1737.

Sir William Osler's Address.

Sir William Osler then addressed the meeting. He said that change was the order of the day; the only thing that did not change was man, and he did not change through the countless ages. As far as diseases went man had changed very little during the historical period. Doctors even had not changed much. For some diseases people were probably just as safe in the hands of Hippocrates and Galen as in the hands of Dr. Llewellyn or in his own hands; but there was one thing that had changed—namely, method: the way of looking at and investigating things. That had changed absolutely and radically, and it was as representing that change that their laboratory was opened that day. Sir William Osler then gave as an illustration the case of typhoid fever. This, he said, in the last generation was well treated (though with more drugs) and well nursed, and when the patient left the hospital doctors and governors were all rather pleased that the case had recovered, and nothing further was done. But nowadays there were at least four agencies at work in hospital upon a case of enteric fever. In the first place, much greater care was taken in the diagnosis, involving elaborate methods which required expert knowledge, and great skill, and represented long and laborious researches. Then the case was treated certainly with fewer drugs, was probably better nursed and was not sent out of the hospital until it was shown to be safe from the standpoint of the community, until it was known not to be a distributing centre of typhoid bacilli. Again, the case was reported to the health authority and the conditions under which it arose were investigated, while no hospital was nowadays complete that looked after a case only from the medical standpoint; they had to regard patients from a wider and humanistic standpoint, from the standpoint of social service. Thus care was taken that the conditions in a home where a case of typhoid fever arose were so altered that another case did not occur, and this social service work in connexion with a hospital was an enormous addition to its usefulness in a community. Lastly, there were interesting modern developments altogether in association with and as a result of laboratory methods. If, for instance, a case of typhoid fever occurred in a large household or common lodging-house, the medical officer of health saw that all persons exposed to infection were inoculated; for it had been shown unquestionably that anti-typhoid inoculation was not only safe but was imperative where large bodies of persons exposed to the disease were being dealt with. Sir William Osler here instanced the remarkable results achieved in the United States Army, and then turned to the disease having the most direct bearing

on the work of the Royal Mineral Water Hospital—viz., chronic arthritis. A generation ago, he said, a case came into the hospital and they merely put it down as rheumatoid arthritis. To-day they studied such cases and differentiated them into separate groups with the object of determining their cause. He instanced the search for a septic focus in teeth or tonsil, or for some source of intoxication in the gastro-intestinal tract, or for some process of auto-intoxication as in gout. Here were three types of cases, and it was to be hoped that within a few years, by investigation pursued along these three lines, some well-defined knowledge would be reached of the cause of this terrible disease, so prevalent, so distressing for the individual, and causing such waste of human energy and life. Sir William Osler then touched on the aims and opportunities of the new laboratory, and in this connexion he uttered a word of warning against the establishment of too many laboratories with too many men entering a career which might lead a certain number of them into a blind alley. A laboratory should be specifically for the benefit of the sick in the hospital, for the purpose of diagnosis and treatment; but in laboratories associated with large collections of cases, as in that hospital, in the interests of the public the laboratory should be a centre of research. At Bath there was a great opportunity of studying types of rheumatoid arthritis with an ulterior object. The problem of the cause of arthritis would certainly be solved; they were now on the high road in getting accurate knowledge of different groups of the disease. There was a magnificent opportunity in Bath to make a very thorough scientific study of the whole subject of arthritis. For this purpose a good museum and a well-equipped and up-to-date library were both most important; also a new X ray department. Their laboratory was excellent, and it remained to be seen what they did with it; everything would depend on whether they had the courage and the money to get the right sort of men to manage it. Sir William Osler concluded his most lucid and interesting address with wishes for the prosperity of the institution and a reference to the long and distinguished medical history of Bath.

The Mayor, Dr. Preston King, in proposing a vote of thanks to Sir William Osler, congratulated the committee on the opening of the laboratory, which had been a very great need for many years. It marked an epoch not only in the existence of the hospital but also in the city of Bath. Dr. R. L. J. Llewellyn, in seconding the vote of thanks, pointed out that to Sir William Osler perhaps more than any other living physician they were indebted for inculcating the necessity on the part of physicians of acquiring a truly critical and scientific attitude of mind. Dr. J. Michell Clarke, Professor of Medicine in the University of Bristol, followed and paid a warm tribute to Sir William Osler's services on behalf of scientific medicine in England. He expressed the hope that the University of Bristol would still further cement the union between the two cities of Bath and Bristol, between which the medical associations had always been close.

The New Laboratory.

The present laboratory is a large, well-equipped, and airy room in what was formerly the Nurses' Home. It replaces the small underground laboratory which was established six years ago and mainly upheld by grants from the medical staff. The pathological work done during the past year has been the investigation of joint fluids from bacteriological, cytological, and chemical points of view, and the estimation of tuberculin and Wassermann reactions in relation to chronic arthritis. The hospital is not a local institution, for the patients come from all parts of the British Isles, and it therefore deserves support from the country at large. An endowment fund for the laboratory and research scholarships would be a great boon, while morbid specimens, books, and reports dealing with chronic joint disease would be welcomed by the pathologists, Dr. J. M. H. Munro and Dr. G. H.-H. Almond, from members of the profession throughout the country. In the evening Sir William Osler and other medical guests were hospitably entertained to dinner at Fortt's Restaurant by the medical staff of the hospital.

New Inventions.

MOVABLE TYPE FOR TESTING THE EYES.

I HAVE frequently found that in testing the eyes in large schools the scholars have been able materially to assist their power of vision by committing the test type to memory. To obviate this I have designed a system of movable type which has been successful in practice. The type is mounted on a ribbon which travels behind a white plate through which little circular windows have been cut. The tape runs on rollers after the manner of a roller film camera, and by a

half turn of the roller the order and lettering of the type are completely changed, so that several variations of lettering are obtained at will. The whole thing is 10 × 4 × 1 inches, and may be conveniently carried in the bag of the medical inspector. One might with advantage be permanently fitted in all large schools.

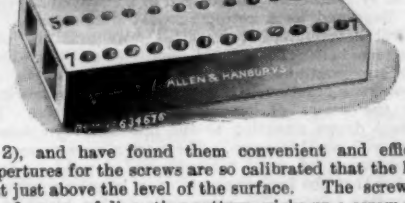
Messrs. Davidson and Co., Great Portland-street, London, W., are the manufacturers of the movable type.

Huntingdon. C. B. MOSS-BLUNDELL, M.D. Brux.

SCREW PLATFORM AND SCREW-CONVEYING FORCEPS.

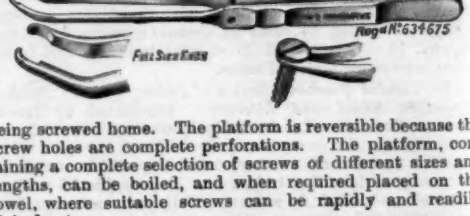
IT is generally conceded that in the plating of fractures a rigid technique must be employed. If handling is to be avoided and assistance is limited, it is of great convenience to be able to select the required screw at a glance and pick it up easily. I have for some time been using the screw platform illustrated in Fig. 1 and screw-conveying forceps

FIG. 1.



(Fig. 2), and have found them convenient and efficient. The apertures for the screws are so calibrated that the heads project just above the level of the surface. The screw-conveying forceps, of dissecting pattern, picks up a screw easily and certainly, and grips it sufficiently to steady it while

FIG. 2.



being screwed home. The platform is reversible because the screw holes are complete perforations. The platform, containing a complete selection of screws of different sizes and lengths, can be boiled, and when required placed on the towel, where suitable screws can be rapidly and readily picked out.

The instruments have been made to my design by Messrs. Allen and Hanburys, Limited, Wigmore-street, London, W.

PERCIVAL P. COLE, M.B., Ch.B. Birm.,
Queen Anne-street, W. F.R.C.S. Eng.

THE LANCET.

LONDON: SATURDAY, JUNE 13, 1914.

The Value of the Coroner's Inquest.

Dr. F. J. WALDO, coroner for the City of London and borough of Southwark, prepares annually a report relating to the inquests held by him in the two areas of his jurisdiction. We have received the report for 1913 with his comments upon the salient features of the various inquiries, and it supplies, as it has done on previous occasions, matter for discussion closely affecting the public safety. The report, indeed, suggests that a series of similar documents from coroners, uniform in character and officially published for the information of those interested in domestic legislation, would be of considerable usefulness, not only to the medical profession, but to the community at large. Let us take an instance. Every now and then an inquest on the body of a person murdered, or supposed to have been murdered, followed by the necessary investigation in a police court and trial before a judge and jury, produces criticism of a nature hostile to the coroner's inquest. The usefulness of the inquest is denied, its methods are derided, and it is pronounced superfluous upon insufficient consideration of a limited section of the duties for which it exists. It is quite true that in an important class of cases the matter into which a coroner inquires is reconsidered before magistrates and again under the presidency of a judge of the High Court, and that the verdict of a coroner's jury is not always endorsed by that of the jury at assizes. Equally it may be found that evidence given on oath in a coroner's court upon a general inquiry into the cause of a death is not admissible before magistrates or before a judge against a person who has been definitely charged with murder or manslaughter. But to condemn the coroner's inquest to extinction upon consideration of these points alone is to ignore the far greater number of cases in which a coroner's inquest shows that no evidence exists upon which a charge of murder or manslaughter can be based. On these occasions, and indeed at all inquests, the public nature of the inquiry and the fact that the evidence is not limited to that affecting particular persons implicated should reassure public opinion. For frequently the inquiry absolves persons who otherwise would have remained subject to undefined charges, while at other times it enables suggestions to be made by members of the public with regard to matters affecting themselves as such. It is true that there are occasions when evidence is given which the education and training of the members of a coroner's jury hardly fit them to weigh adequately, but this is chiefly the case with regard to medical evidence concerning which a medical coroner can supply the necessary guidance. The importance of appointing medical men as coroners is already widely recognised, and is likely to be increased rather than diminished by the alterations in procedure with regard to inquests which have recently been recommended. The purely medical coroner may be weak on legal procedure, but the purely legal coroner is at least as likely to be weak on medical evidence, and the public run more risk under the latter's administration. It is possible that in the future a dual qualification will be demanded by far-seeing communities.

Among subjects of importance prominent in Dr. WALDO'S report will be found the consideration of deaths due to vehicles. These, we need hardly point out, are not confined to the City of London or to Southwark, and would be found to occupy considerable space in the reports of coroners throughout the kingdom and in rural as well as urban localities. In the commercial centre of London the use of horses for heavy traffic is no doubt responsible for the fact that although motor vehicles cause many deaths there is still a noticeable proportion due to horse vehicles. The total number of such deaths during 1913 was 50, of which 22 took place in the City, 15 through motors and 7 through horse-drawn vehicles; 28 took place in Southwark, of which 20 are assigned to the former mode of traction and 8 to the latter. It is satisfactory to learn that this total is less by 11 than that of 1912, an improvement which may be due to an increase of central refuges or islands in the roadway. Dr. WALDO recommends that the number of islands should be still further augmented, and notes that juries have in many instances added riders to their verdicts calling attention to the need of them at particular spots. The construction of subways is not often advised nowadays in the light of experience. Those who will take the trouble to use them are comparatively few, and when not used they become a source of danger, for while the authorities are satisfied that they have supplied a safeguard no advantage is taken of it. The habit of dexterously crossing roads thronged with motor vehicles is being acquired, and this, when it is combined with an increase in the number of refuges, and an advance in the skill of drivers, should much minimise street accidents. But when accidents do take place they are usually of a very serious character, and a toll of human life amounting annually to 50 in a limited, if congested, area is a matter for serious consideration, when we remember that such an accident rarely takes place in circumstances which render it unavoidable. Two topics of importance are mentioned in this connexion in Dr. WALDO'S report: the first is the

possible compulsory adoption of guards or fenders for motor omnibuses and lorries, and the second the provision of ambulances for the removal of the injured when an accident takes place. The guards already in use upon many omnibuses are more or less of an experimental character, but more such devices would follow if a wide-spread use of them was present to stimulate the ingenuity of inventors. With regard to the extended use of motor ambulances, the City proper has long set an example to the rest of London, and the delays which have taken place in the organisation of a proper ambulance service for the County of London, and their various causes, do not call for discussion from us at this moment. References to the matter will be found not only in the present report of the coroner for the City of London but in those for past years, and whenever London can boast of a system of ambulances calculated to convey accident cases rapidly and safely to hospitals it will be due in no small measure to public attention having been drawn repeatedly to the matter by coroners' juries. Public opinion is not easily roused in a law-abiding population content to accept undesirable conditions of life as though they were inevitable, but in a popular tribunal like a coroner's inquest there is an opportunity for the expression of practical opinions by those most concerned which may prove at any time of value to the community.

The stimulus to legislative reform or municipal enterprise which is supplied by the verdict of the coroner's jury may manifest itself in many obvious ways. The dangers of flannelette and of celluloid in connexion with the loss of life through fire, the danger to infant life through children in humble circumstances sleeping in the same bed with their parents or playing in crowded rooms with unguarded grates, are matters in which the legislature has sought to interfere, and with regard to which the public mind is now generally better informed, largely through the intelligent efforts of coroners, than it was a few years ago. With respect to the wanton loss of infant life, the law has been brought into action in an appreciable degree by the expressed opinions of coroners' juries when the evidence has demonstrated that preventable deaths have occurred, and their verdicts have been delivered with force and unanimity largely because of the class from which coroners' juries are drawn. To these juries the exact conditions under which their neighbours live are very familiar, and they are able to make allowances for one witness and to neglect the testimony of another in a manner that in the long run makes for justice and reform. We should be sorry to see the coroner's court abolished unless some other tribunal with compensating advantages were substituted; and if reports supplied by many coroners were to be collected and published, in proof of the valuable nature of their duties, we think that much recent criticism would not have been uttered.

The Practical Importance of the Study of the Reaction of the Blood.

IT not infrequently happens that researches into biological problems, which at first appear to be abstruse and transcendental, prove in the light of wider experience and extended application to be of great practical significance and value. The study of the changes in the reaction of the blood, so ably and critically presented by Dr. F. GOWLAND HOPKINS in his important Oliver-Sharpey lectures, the second of which appears in our columns this week, affords an interesting case in point. The older text-books on physiology were content with the bare statement that the reaction of the blood and of its plasma was alkaline to litmus, and although a number of observations were made by titration to determine the degree of alkalinity in health and disease they achieved no general recognition until the part played by acidosis in pathology was established. The application of the methods of physical chemistry to the problem soon demonstrated that the older observations were erroneous, and that the actual reaction of the blood was practically neutral, although it was also found that considerable quantities of acid or of alkali could be added without altering the reaction of the blood.

That titration by standard acid could not be relied upon for the purpose of this estimation became evident from the fact that the end point varied with different indicators, such as litmus or phenolphthalein. Physico-chemical methods have demonstrated that the actual acidity of a solution depends upon the presence of free hydrogen ions, while alkalinity depends upon free hydroxyl ions in solution. The hydrogen ion concentration is capable of measurement even in small quantities of fluid by an electrical method. Dr. HOPKINS points out that it can also be efficiently and accurately determined by a method introduced by Mr. J. BARCROFT, which is capable of application to the clinical study of the reaction of the blood in disease. It consists in the study of oxyhæmoglobin dissociation curves, since BARCROFT and his co-workers have shown that these curves are displaced in regular fashion but not altered in form by variations in the effective acidity or hydrogen ion concentration of the blood. When the relation of the reaction of the blood to the activity of the various bodily functions is studied some interesting and important facts emerge. The respiratory centre proves to be extraordinarily sensitive to any change in reaction; the slightest increase in acidity, whether produced by carbonic acid or any other acid, leads to dyspnœa, while the slightest increase in alkalinity induces apnœa. Dr. HOPKINS refers to some other observations which tend to show that the kidneys must also be extremely sensitive to changes in the reaction of the blood and that they play an important part in regulating this reaction. It would seem that the lung controls the hydrogen

ions due to carbonic acid, the kidneys those due to other acids, with the result that the mean normal reaction of the blood is adjusted with great exactness in spite of varying conditions. RYFFEL and POULTON by means of BARCROFT'S method have shown that in uræmia there is excess of acid in the blood, and T. LEWIS and BARCROFT have demonstrated that cases of disease exist in which dyspnœa occurs without an equivalent cyanosis, apparently due to an increase in the proportion of acids to bases in the blood resulting from renal deficiency. Dr. HOPKINS points out that there is a good deal of evidence that the administration of alkalies increases the oxidative processes of metabolism while acids diminish them, and he suggests that the increase of alkalinity of the blood in fever may be a factor in producing the increased metabolism associated with it.

In regard to carbohydrate metabolism some interesting points are also discussed. Certain experiments by RONA and WILLENKO upon the isolated perfused heart have shown that the utilisation of sugar by the heart is lessened by rise of acidity in the fluid circulating through it, and Dr. HOPKINS mentions some interesting observations which suggest that the reaction of the blood may be a factor of great importance in regard to the mobilisation of the carbohydrate stores of the organism. It is somewhat surprising to find that the acidosis produced by strenuous exercise at high altitudes should induce more change in the actual reaction of the blood than the grave acidosis of diabetes, in which compensatory mechanisms are developed. Dr. HOPKINS multiplies examples of the importance of changes of the blood reaction to the activity of the various tissues and organs. His lectures, though apparently abstruse, prove to be full of suggestive ideas, and point the way to important practical researches in disease, and we cordially endorse his plea for the application of the methods he recommends to the study of many problems yet awaiting solution in this connexion.

Certification under the Insurance Act in Ireland.

A mass meeting of the medical profession of Ireland was held last week at the Mansion House, Dublin, to consider the serious position that has arisen in regard to certification under the National Insurance Act. The exclusion of the medical benefit from the Act as it applies to Ireland has brought it about that the problems created for the medical profession of that country are quite different from those that the profession of Great Britain has had to face. Up to the present the chief difficulty has centred round the question of certification—that is to say, the provision of medical evidence entitling an insured person to the sickness or disablement benefit. Under the terms of the Insurance Act itself the onus of paying for such evidence was put on the administration funds of the Approved Societies, but no society has made use of its powers in this way further than in some instances to employ lay inspectors. Recognising that some special provision must be made to pay for certificates, the Treasury early in 1913 provided for that year a sum of £50,000. The Irish Insurance Commissioners, after consultation with the representatives of the medical profession, decided on the establishment of panels for certification on similar lines to the panels for medical attendance in England. In most of the country the panels failed to fill, the medical men considering the remuneration too small. In Belfast and Cork and in a few of the northern counties the panels filled, and have, we believe, worked satisfactorily. It is true that charges of slackness and of connivance at malingering have been levelled at the panel doctors, but, in spite of repeated invitations to produce specific cases of careless certification, neither the Commissioners nor the officials of the various society officials have reported a single instance of the kind either to the Local Medical Committees or to the General Medical Council. Nor have the Commissioners removed a single name from the panel.

The panels having failed to fill in the greater part of the country, the Commissioners last June and July appointed a number of so-called "medical advisers," whose duty was to examine patients on request from the secretary of an Approved Society. As was to be expected, these appointments did not meet with the approval of the medical profession, and the men appointed have failed to command the public confidence, while some of the Approved Societies, after a short experience, abstained from making further use of their services. Recognising that such appointments were only a makeshift, Mr. LLOYD GEORGE, in August, 1913, in the House of Commons, promised that the Treasury would find an additional sum of money for certification purposes in Ireland, the total not to exceed a capitation rate of 2*s*. 6*d*. per insured person. At that time this would have produced a sum of about £91,000. The money at the disposal of the Commissioners being now sufficient, the Irish Medical Committee, as representing the medical profession, offered its services to the Insurance Commissioners in drafting a scheme. It was not, however, until December last that this offer was accepted. The Irish Medical Committee then put forward two alternative proposals:—(1) an extension to the rest of the country of the panel scheme already in existence in some areas; and (2) a pooling scheme. Whichever scheme was adopted sufficient money to provide for the payment of referees and the provision of second opinions in necessary cases was to be deducted prior to distribution. To make this possible without undue diminution of the grants to country areas, the medical profession of the six county boroughs offered to pay out of their share the expense of referees for the entire country. The

proposals of the Irish Medical Committee appeared to meet with the approval of the Insurance Commissioners, and it was hoped that a satisfactory scheme might have come into operation early in the present year. In the middle of January, however, the Insurance Commissioners held a conference with representatives of the Approved Societies. These representatives made a new demand. They asked that the Commissioners should appoint a sufficiency of whole-time medical certifiers, the societies to be relieved of the obligation to pay sickness benefit except on the certificate of one of these officers. Further, it was asked that these officers should be appointed at the nomination of the societies, but from this latter view the Commissioners dissented. After this conference the Irish Medical Committee was informed that the Commissioners despaired of formulating a scheme which would satisfy both the medical profession and the societies. There the matter has rested for nearly five months. During that time, however, the Irish Medical Committee has pressed for an interview with Mr. LLOYD GEORGE, but without effect, and has expressed its willingness to meet representatives of the societies and discuss the matter with them in the presence of Mr. LLOYD GEORGE.

Such in brief is the history of the proceedings that was put before the mass meeting last week. The meeting, in a series of resolutions, emphasised the necessity, from the point of view of the insured person, of the certificate of the patient's own medical attendant being accepted as primary evidence of incapacity. At the same time, it is to be borne in mind that the medical profession not only raises no objection to the establishment of a system of referees, but actually welcomes such a system. The present position is that the Insurance Commissioners are not unlikely to give way to the pressure of the representatives of the Approved Societies, and appoint a number of whole-time and part-time certifiers. It is scarcely necessary to point out how hardly such a system may press on the insured. At the meeting numerous instances were related of injustice to the insured through their failure under the system now in temporary vogue to receive the benefits to which they were entitled. In most instances this failure followed on the decision of a medical adviser. In one case a woman died penniless three days after a medical adviser—paid out of public funds—had stopped her sickness benefit. In another, a man died in the workhouse from cancer of the stomach ten days after his benefit had been stopped. In both these cases the certificate of the medical attendant had been ignored. In another case a patient was ordered to present himself for examination by a "medical adviser" 18 miles from his home. Such cases, we understand, are not unusual in the working of the Insurance Act in Ireland. Under a system of whole-time certifiers they are likely to be indefinitely multiplied. We do not know how far the Insurance Commissioners are committed to the plan put forward by the societies. As no public announcement has yet been made, we may assume that no scheme is yet complete. The entire success of the Insurance Act in Ireland appears to be at stake, including the working of the sanatorium benefit. The Insurance Commissioners and those to whom they are responsible will do well to weigh the arguments put forward at the mass meeting of the medical profession before they decide on a scheme which must meet with the hostility of the Irish medical profession and may submit members of Approved Societies to an intolerable tyranny.

Annotations.

"Ne quid nimis."

THE HOSPITAL CARE OF POLICE PATIENTS.

Dr. Maurice A. Cassidy has been appointed physician to the London or Metropolitan Police Force, a force which now numbers 22,000 men, and which, although a picked body, has a high sickness and injury rate owing to the arduous nature of the duties. It is clear that the appointment of a physician was absolutely required under modern conceptions of public duty towards a section of the community so large and so strenuously employed, while it seems to us that the needs of the force might well now be met in another direction. For all these 22,000 men, of whom as many as 14 per cent. may be annually injured in the course of their routine work, there is not a single definitely allotted bed in any of our general hospitals. We recorded recently with great pleasure that, under an arrangement made at the instance of Sir Edward Henry, the Commissioner of Police, with the approval of the Home Secretary, subscriptions from the police funds will be forthcoming equivalent to a sum of 1 guinea per week on account of every police in-patient admitted to any hospital during the year. This contribution, which is on a voluntary basis, is a valuable change in the methods of dealing with police in-patients in the metropolitan hospitals; but it seems to us that particular beds for the police might well be arranged for in these great institutions, unless, indeed, it should be found practicable to establish a small police hospital for the reception of the sick and injured of the force.

THE AERIAL CONVEYANCE OF INFECTION.

IN another column we publish an interesting article on this important subject by Dr. Frederic Thomson, medical superintendent of the North-Eastern Hospital, Tottenham, and Mr. Clifford Price. The question as to whether infection can be carried by the air has been much discussed, and although the atmosphere can scarcely be regarded as an important medium for the spread of diseases over long distances, nevertheless in the case of small-pox, and perhaps enteric fever, there is some evidence to suggest the disease may be carried by infected dust particles, probably fragments of dried discharges from persons suffering from the disease. Early in 1912 Dr. Thomson and Mr. Price commenced to make a series of observations in certain infectious diseases, using the most

stringent precautions that the infection could not be carried by individuals who came in contact with the patients. The exact details are described in their communication, and prove that a patient and painstaking investigation was carried out. The diseases under treatment consisted of scarlet fever, diphtheria, rötheln, mumps, whooping-cough, measles, and chicken-pox. The arrangement of the ward was an interesting one, and as the result of their experience Dr. Thomson and Mr. Price assert that they could treat these infectious diseases in one ward, almost certainly, with perfect safety if the day of the disease on which the patients were to be admitted could be selected. The conclusions which were arrived at are stated with due caution. With regard to scarlet fever they consider that the infection is not air-borne. The evidence as to whooping-cough was uncertain, but in regard to measles they believe that the infection is probably carried by the air early in the disease only. The infection of chicken-pox also appears to be air-borne until the third day. The number of cases of other diseases which were treated were too few to be of any definite value. These observations are certainly interesting, and if corroborated by a larger number of cases would prove of considerable value.

PELLAGRA IN NYASALAND.

THE awakened interest in the problem of pellagra justifies reference to a recent paper by Dr. Hugh S. Stannus, medical officer at Zomba, Nyasaland, read before the Society of Tropical Medicine and Hygiene, and published in their Transactions.[1] To Dr. Stannus belongs the honour of discovering the existence and describing the symptomatology of pellagra as it occurs in that part of the world, and in this second communication[2] he amplifies his previous statements and supplies important data for a study of the etiology of the disease. During the last two years the spread of pellagra in and around the Central Prison at Zomba has been such that it amounts to an actual epidemic, in the course of which 131 cases have been directly under Dr. Stannus's observation. As far as the symptoms are concerned, stress is laid on the remarkable symmetry of the rash, which begins in these African cases usually on the antero-lateral surfaces of the upper third of the forearm, the anticubital fossa, and the lower third of the upper arm, appearing thereafter on the back of the hand, the triangles of the neck, the "butterfly" area of face, forehead, and upper surface of pinna. It is very common to find a condition like syphilitic rhagades at the corners of the mouth, where the epithelium becomes sodden and thickened, and cracks appear in it, passing across the mucocutaneous junction a little way into the mouth. A not infrequent affection of the free margin of the prepuce is exactly similar. There is often a glossitis with subsequent irregular epithelial denudation, giving an appearance described as "geographical" tongue. The whole mucous membrane of the mouth may be involved, and the process may spread to the fauces and pharynx. Dr. Stannus believes in the possibility of pellagra sine exanthemata, and quotes illustrative instances. The nervous system symptoms, the alimentary symptoms, and the numerous complications of the disease are described and tabulated, and then the writer proceeds to discuss the difficult matter of etiology. Six cases occurred among 27 warders employed in the prison, and 16 in some 150 men of the King's African Rifles, whose lines are close to the prison. On the other hand, none occurred in some 72 Sikhs, also stationed in the neighbourhood. The rations to prisoners, Sikhs, troops, and warders consisted mainly of rice, all drawn from the same supply. It is certain that in the case of many of the pellagrous prisoners maize has not entered into their diet at all for years. Dr. Stannus thinks that the data he adduces absolutely put all maize theories, as such, out of the question. On the other hand, if "grain" be substituted for "maize," then the theory is not to be so easily dismissed. At Zomba the prison ration consists of rice and salt, and in the majority of cases little or nothing else. It is therefore quite possible that so restricted a diet may lead to the appearance of pellagra as the expression of a deficiency, after the analogy of beri-beri. As the rice is eaten in Nyasaland, part at least of the pericarp is left on the grain. Dr. Stannus, however, shows that the risk of partaking of damaged rice is considerable. Turning to the theory of protozoal infection, Dr. Stannus has made a laborious investigation of the simulium distribution in Nyasaland in its bearing on Dr. Sambon's theory of the association of pellagra with the simulium fly. He has found the fly in abundance on all of the streams in the neighbourhood of Zomba, and frankly states that he can bring forward no facts to militate against Dr. Sambon's theory. At the same time, he points out that it must be carefully noted that the data brought forward equally support the theory which lays the cause of the disease at the door of malnutrition—i.e., nutrition wanting in some essential principle. Further, Dr. Stannus declares that in no disease caused by a living virus is a regular complete cessation of symptoms seen, with relapse at a definite season many months later, such as occurs or may occur in pellagra, and this leads him to believe that if the condition is associated with a protozoal infection there must be seasonal reinfection or intoxication, and not a relapse. Dr. Stannus's very careful clinical observations and investigations form a valuable contribution to the study of the disease.

[1] Transactions of the Society of Tropical Medicine and Hygiene, vol. vii., No. 1., p. 32.
[2] See, for reference to the first, THE LANCET, Feb. 3rd, 1912, p. 314.

INDEX CORRELATIONS.

IN connexion with the Lister Institute of Preventive Medicine a statistical study of index correlations has been undertaken by J. W. Brown, M. Greenwood, jun., and Frances Wood, particulars of which appeared in a paper in the *Journal of the Royal Statistical Society* for February last. The problem, which is of some importance in medical statistics, is of the following nature. In a series of districts with populations represented by z_0, z_1, z_2, &c., the deaths from a certain disease are x_0, x_1, x_2, &c., and from some other disease y_0, y_1, y_2, &c. The question arises whether there is any association between the x's and y's which is independent of the common relation of each with z. In order to obtain the requisite materials for this study the Report of the English Registrar-General for 1901 has been laid under contribution, the investigators having faced the very considerable labour of taking out from that source the first thousand registration subdistricts with

populations between 1000 and 10,000, together with the corresponding numbers of births and deaths. The birth- and death-rates were then computed and the necessary correlation tables drawn up. These data were then completely analysed and the resulting constants appear in Table 10. The provisional conclusions derivable from this study are fully set forth in the paper, which will be found instructive and suggestive for further study of the problem.

ANAPHYLAXIS AND IDIOSYNCRASY.

SINCE the introduction of serum therapy the phenomena of hypersensibility and the "serum disease" have been closely followed and studied with absorbing interest. One of the latest original contributions to the subject is from the pen of Professor T. Silvestri, of the University of Modena, published in a recent number of *Il Policlinico*.[1] Whether there exist anaphylactic properties in certain drugs, or whether such properties are limited to albuminoid substances or are possessed by colloids in general and by certain crystalloids, are questions which have previously attracted the attention of other observers, such as Gubler, Bruck, and Klausner, while E. Friedberger and Ito attempted to produce hypersensibility to iodine in guinea-pigs by preparing them by injections of iodised albumin. Nicola Barbaro in a recent note on the determining action of certain crystalloid substances relates the case of a patient with acute polyarticular rheumatism in whom a small quantity of salicylate of sodium (30 grains daily) and minimum doses of iodide of potassium (4 to 8 grains) were followed by gastro-intestinal disturbance, diffuse erythema, pyrexia, and blood changes, and another case of a man, in whom the ingestion of fish gave rise to urticaria, who exhibited alarming symptoms after the injection of $\frac{1}{3}$th grain of morphia. These phenomena may be of an anaphylactic nature, but as the anaphylaxis is not specific in each case it must be admitted that the anaphylactic state may have been prepared or merely brought into action by the morbid process and determined by the medicinal crystalloids. While waiting for more light to be thrown on such cases, it might be stated provisionally that the crystalloids do not give rise to antibodies, but that where the latter already exist they may determine anaphylaxis. In the present state of our knowledge concerning the anaphylaxis of crystalloids it may be affirmed that it does not yet rest on a solid basis of experiment, and that although we are not in a position to deny in an absolute manner the affinity, if not the identity, between the manifestations of idiosyncrasy for certain drugs and those of anaphylaxis, there is a tendency among scientists to recognise that at least some crystalloid bodies have a determinant action, direct or indirect. In all cases of idiosyncrasy the symptoms are those of poisoning by the respective drugs; the peculiarity of the case consists in the rapidity, and especially in the disproportion between cause and effect. Hence we do not speak of anaphylaxis in such cases, but of intolerance or idiosyncrasy towards the drugs used. When, however, we come to investigate the significance of true anaphylactic shock we are struck by the fact that whatever be the antigen used the symptoms are more or less identical. To explain this phenomenon it has been supposed that anaphylactic shock is the effect of the reaction between albuminoid antigen and antibodies in the presence of blood serum, the antigen undergoing a fermentative action with the formation of highly toxic products. But, on the other hand, Doerr has pointed out that fermentative actions are slow processes, while anaphylactic shock often takes place with lightning rapidity, and that the quantity of antigen sufficient to cause fatal shock is so small that it is difficult to imagine how, from the release of so minute a quantity of albumin, sufficient toxic bodies can be produced. Professor Silvestri, in criticising these views, advances the opinion that just as in true anaphylaxis, i.e., a poisoning of proteic nature, so in drug idiosyncrasy we have a group of symptoms whose peculiarity consists in the rapidity, violence, and disproportion between cause and effect, which reproduces exactly the symptoms of poisoning corresponding to the substance in question. Hence anaphylaxis and drug idiosyncrasy have essentially something in common, nor is it a valid objection that in the latter we cannot explain the mechanism of the accident caused by substances not biologically active, since we are in the same state of ignorance concerning those instances where the system becomes tolerant of and accustomed to large doses of poisonous drugs. It seems to Professor Silvestri still uncertain whether the field of anaphylaxis should be so far extended as to cover true drug idiosyncrasy, or whether experimental or spontaneous anaphylaxis should be considered simply a particular instance of idiosyncrasy in general. Anaphylaxis he considers a defensive reaction of ancestral origin against anything that threatens the integrity of the economy, either wholly or in part. It is for him a tumultuous reaction, disproportionate owing to a lack of adaptation to a given virus or given substance, a reaction which precedes immunity. It may be that the exceptional gravity of the diseases which rage for the first time in a given locality is in some cases an instance of anaphylactic reaction. In evolution, says Professor Silvestri, anaphylaxis must have preceded immunity, as it precedes it, as a rule, in experimental and clinical anaphylaxis. If at times it accompanies or follows immunity—at least in the laboratory, in animals which furnish a highly antitoxic serum, and which therefore have acquired a marked immunity with respect to a given infection—this fact is not in absolute contradiction to what has been just stated, for it may be assumed that by repeating the stimulus (injection of toxin) for too long a time the organism would respond with a paradoxical reaction. This would constitute another argument in favour of the theory of the identity of anaphylaxis and idiosyncrasy in general.

[1] Il Policlinico, anno xxi., fasc. 10, March 8th, 1914. Via del Tritone 46, Roma.

JAUNDICE OF PREGNANCY WITH JAUNDICE IN THE OFFSPRING.

A REMARKABLE case is recorded by Dr. F. E. Tylecote in the *Medical Chronicle* (1914, p. 465) of a woman who married at the age of 18 in 1894, and who has since then had eight children. Each child was born prematurely, the first at six months, the second at seven months, and the remainder at eight months. With each pregnancy the woman had jaundice which came on at the third month, increased in intensity, persisting till three months after confinement, and was unassociated with any pain. Its onset was always insidious. She had

never before had jaundice. Of the eight children seven had jaundice; this came on in six a week after birth; in the other, in two days. Six of the children died, all with convulsions, at ages varying from two days to nine months; the only child which recovered and which is still living was the fifth; like the rest it had jaundice when a week old. It was breast-fed for ten days from birth, an interesting fact, as all the other children were artificially fed. The only child which escaped jaundice was the first-born, which only lived an hour, and it is stated that in these familial jaundice cases immunity of the earlier children is common. The woman herself in 1910 had persistent jaundice accompanied by a marked xanthomatous condition which had started on the fingers and hands 14 years *after* the first attack of jaundice, which suggests the latter condition is not dependent, in this instance at any rate, upon xanthomatous nodules in the liver. She had a markedly enlarged liver, and there was bile in the urine. There was no pyrexia. The jaundice was deep, and during observation in hospital in 1910 was not variable in intensity.

CHLOROFORM ANÆSTHESIA AND ADRENALIN.

THE general conclusion has been reached that though in some cases of death under chloroform anæsthesia the death is due to overdosage, in many others this is not the cause. Death has occurred frequently under light anæsthesia, often at the early stages, and sometimes when the anæsthesia has been interrupted and variable in intensity. When direct and careful observation has been made under conditions naturally militating against exact and scientific methods, it has been noted that it was the heart which failed and not the respiration. In cats under light anæsthesia A. G. Levy has noted the frequent incidence of cardiac irregularities and often sudden death. The latter was demonstrably due to ventricular fibrillation. It is suggested that this is the cause in clinical cases, and with much reason. Of the preceding irregularities and their relation to the final consummation, ventricular fibrillation, it was shown that they arose from an "irritable" ventricle, a ventricle giving rise to frequent extrasystoles and sometimes tachycardia. The intimate relation of such to fibrillation is sufficient to suggest that the latter is merely a further advance upon the former. Incidental to Levy's observations it was noted that the injection of small doses of adrenalin favoured both the irregularities and the onset of fibrillation. This was shown by the fact that even under deep chloroform anæsthesia its injection caused similar arrhythmias to those seen, without its addition, under light chloroform dosage. The practical value of these observations is obvious, and has been intensified by the recent clinical fatalities which have followed the administration of chloroform after local adrenalin application. More exact knowledge of this drug's action and its relation to light chloroform anæsthesia has been furnished by the admirable researches of E. Nobel and C. J. Rothberger, published in the *Zeitschrift für die Gesamte Experimentelle Medizin* (1914, Band iii., p. 151). These results, in the first place, confirm those of Levy with regard to the effect of adrenalin, but they differ from his view that increased "irritability" of the heart is the cause. Rather do they believe that the irregularity is due to simultaneous stimulation of the extracardial nerves, the vagus and the sympathetic. They noted that the "irritability" is depressed by chloroform, vagal central action is rather increased, and adrenalin acts much more easily when the vagi are intact. In one experiment standstill of the heart was induced by adrenalin and chloroform when the vagi were intact, a result never gained with divided vagi. This shows the effect of adrenalin upon the vagus, whose sensitiveness is, it is suggested, heightened by the chloroform. The heightened vagal tone is shown in most of the experiments (performed upon cats and dogs) by a primary bradycardia. There is sinal slowing. A further vagal effect follows. This is depression of *a.-v.* conductivity, leading even to complete dissociation of auricles and ventricles. With suitable strength of adrenalin further effects are noted, and these are due to accelerator stimulation. These effects are seen in frequent ventricular extrasystoles or tachycardia, arising usually, but not always, in the left ventricle, and often preceded by a brief period in which the node of Tawara (the secondary centre) controls the rhythm of the heart. Where sudden death occurs it is at this stage, when the tachycardia may break into fibrillation, or when the latter arises *de novo*. With recovery from the tachycardia there occurs a "secondary bradycardia." This is due to nodal automaticity, a condition only rendered possible by associated sinal depression, the persisting vagal effect. The irregularities, then, observed under light chloroform anæsthesia with adrenalin follow a definite plan. It is a plan explainable by synchronous vagal and accelerator stimulation, and in this respect follows strikingly the experimental effects following direct and combined stimulation of these nerves. Of practical importance is another fact elicited and explainable—namely, that previous injection of atropine, by cutting off vagal effects, renders irregularities less easy to produce. This it does in one way by maintaining the normal sinal dominance of rhythm. Atropine later in the experiment has not the same effect—in fact, may be dangerous. In cases, then, which require adrenalin and chloroform a preliminary injection of atropine is strongly advisable. The observations afford an explanation of facts previously seen clinically as well as experimentally, and indicate in a striking manner the practical application of the string galvanometer, by which alone could the interpretation of events be effected.

LEUCOCYTOSIS OF THE CEREBRO-SPINAL FLUID WITH MENINGEAL SYMPTOMS IN CEREBRAL HÆMORRHAGE.

AT a meeting of the Société Médicale des Hôpitaux of Paris on May 1st M. J. Amaudrut and M. A. Gendron reported two cases of cerebral hæmorrhage accompanied by conditions which have rarely been observed—leucocytosis of the cerebro-spinal fluid and meningeal symptoms. A man, aged 38 years, was taken to hospital on Oct. 7th, 1912, suffering from coma and right hemiplegia which began five days before. He had previously been quite well. On the paralysed side the plantar reflex was extensor, the patellar and tendo Achillis reflexes were abolished, and the radial and olecranon reflexes were increased. There were also meningeal symptoms; Kernig's sign was well marked on the sound side, the neck was rigid, and when the head was briskly flexed on the chest flexion of the left thigh was produced. There was no albumin or sugar in the urine, and the Wassermann reaction was positive. However, mercurial treatment was adopted. The patient remained in this state until the 16th. On the 19th he was sufficiently conscious

for the existence of complete aphasia to be observed. The meningeal symptoms gradually diminished. On several occasions lumbar puncture was performed with similar results. On the 9th the cerebro-spinal fluid was found under increased tension, of an amber colour and turbid. It contained 688 leucocytes per cubic millimetre, which consisted of 88·3 per cent. of polynuclears, 9·3 of lymphocytes, and 2·3 of mononuclears. Cultures of the fluid were sterile and inoculation of a rabbit negative. Recovery ensued. In the second case a man, aged 30 years, the subject of plumbism, was taken to hospital comatose on Sept. 26th, 1912. There was right hemiplegia. He had had a "stroke" during his work. He remained in this state for 48 hours, and on the morning of the 28th, when he became conscious, he was found to be aphasic. In the evening he again became comatose, and in addition to the hemiplegia meningeal symptoms were found. The neck was rigid and Kernig's sign was present on the left side. There was optic neuritis and the urine contained albumin. Lumbar puncture was performed several times. On the 26th the cerebro-spinal fluid had the rose-colour of hæmorrhage. On the 28th it was of an amber colour and contained leucocytes in abundance. They were almost all intact polynuclears. There were no red corpuscles. Death occurred on the 30th. The necropsy showed an encysted hæmorrhage which had destroyed the left internal capsule and part of the grey nuclei.

LESIONS OF THE CAUDA EQUINA.

HIDDEN away as it is from most investigators, even from the enterprising surgeon of the twentieth century (whose researches lead him into districts that the pathologists of past generations were content to leave unexplored unless there were special reasons for going there), the cauda equina has hitherto received something less than its due share of attention. However, this is going to be changed, as two papers in the April and May numbers of the *American Journal of the Medical Sciences* show. The first, by Dr. Joseph Collins and Dr. C. A. Elsberg, describes recently observed cases of giant tumours encountered in this area. These tumours, they say, seem to originate in the pia over the roots or from the roots themselves; they grow slowly, causing few symptoms until they have attained such a size that they fill the entire lower part of the spinal canal, extending upwards over the conus and the lumbo-sacral cord. Three such cases are described, in the first of which the diagnosis was suspected, while in the other two a correct diagnosis of giant tumour of the cauda equina was made before the operation. In spite of this diagnostic accuracy the results of operation were not very good; two of the patients were considerably relieved, but it was impossible to effect a complete removal of the growth. The writers think that an earlier diagnosis would offer some hope of a radical success. As they point out, their patients' histories presented a long period of premonitory symptoms, chief among which were pain in the small of the back, extending sooner or later into one and then the other lower limb, and leading to a diagnosis of sciatica, stiffness of the lumbar back, increasing stiffness and weakness in the lower limbs, with drop-foot, and slight sphincter disturbances. To these data objective examination added the discovery of paralysis of the peronei and sometimes of the anterior tibial group, absence of the knee- and ankle-jerks, tenderness of the lower lumbar spines, irregular and asymmetrical sensory disturbances, and absence of cerebro-spinal fluid or of characteristic changes on lumbar puncture. The tumours removed were endotheliomata or endothelial sarcomata; they were relatively benign and did not tend to extend through the dura. The second paper, by Dr. Foster Kennedy, Dr. C. A. Elsberg, and Dr. C. I. Lambert, emanates from the same source, the New York Neurological Institute. In it the authors describe what they regard as a new morbid entity. This belief is based on observation of five cases so closely resembling one another, and so different from anything hitherto described, that it seems to be well founded. The symptoms were pain in the lower limbs, especially in the backs of the thighs and the calves; atrophy of the anterior tibial muscles, with drop foot; objective sensory phenomena most marked and severe in the areas supplied by the sacral roots; loss of knee-jerks, and (in three cases) a plantar extensor response. At the laminectomies which were performed in every instance the caudal roots were found to be swollen, congested, and bluish-red in colour. Pathological examination showed these appearances to be due to a meningo-radiculitis which was not syphilitic or tuberculous in character, but which is very suggestively compared by the authors to a similar condition found in horses, and to the phenomena produced experimentally in these and other nerve roots by bacterial toxins ascending from the periphery into the central nervous system along the nerve trunks. In these human cases, however, no source of infection of this kind appears to have been discoverable.

SEASONAL CHANGES IN THE HEALTH OF THE CONSUMPTIVE.

THE popular belief that the summer months are the most favourable for the consumptive is, no doubt, largely founded on the observation that coughs and colds are so much more frequent in the winter than in the summer. But even when the non-tuberculous conditions are excluded it would seem that the prevailing belief in the salubrity of the summer months is founded on fact as far as consumption is concerned. This view has lately been confirmed and amplified by Dr. N. J. Strandgaard, whose investigations, communicated at a meeting of the Medical Society of Copenhagen, have been published in *Hospitalstidende* of April 1st. It is the practice for patients in the Danish sanatoriums to be weighed every Saturday morning, and the average gain of weight is between 200 and 300 grammes. To be exact, the average is 270 grammes, which is the figure given for eight sanatoriums with an average total of 800 patients during a period of 10 years. The average gain of weight varies much with the season of the year. From December to May it is fairly uniform but low, being 225 to 250 grammes. It rises rapidly and steadily from May to September, during which month it reaches the maximum of 380 grammes. It falls from October to December, which is the month showing the smallest gain of weight. The average gain of weight in September is almost double that in December, and there can be little doubt that gain in weight is, as a rule, accompanied with improvement in the patient's health. Thus at Boserup, one of the Danish sanatoriums, it was noted during an observation period of 10 years, that the proportion of febrile patients confined to bed was about twice as great in the

winter as in the summer months. The proportion of patients without expectoration and bacilli was greatest in August and September, least in the months January to April. Among the factors responsible for the seasonal changes in the patient's weight are the atmospheric conditions. In one week in the summer of 1908 the average for five sanatoriums actually showed a loss of weight, whereas there had been a substantial gain of weight during the preceding and following weeks. During these weeks the humidity of the air had been high; during the middle week it had been low. This relationship is further illustrated by the uniformity with which the average gain of weight curve follows that of the relative humidity of the atmosphere. The warmth of the air also seems to affect the patient's weight, for the atmospheric temperature was 2° C. higher during "heavy" than it was during "light" weeks. Dr. Strandgaard suggests that these observations point to sunlight, warmth and moisture being fattening, while darkness, cold and dryness would appear to be relatively emaciating. His observations on the relation of the consumptive's weight to the seasons of the year show a striking similarity to the results obtained by Bondeson and Jörgenson in connexion with soldiers, by Adsersen and Milo in connexion with the new born, and by Malling-Hansen in connexion with older children. Finsen's investigations into the amount of hæmoglobin in the blood during the seasons of the year also tally with Dr. Strandgaard's conclusions. These are instructive, but it should be borne in mind that they are based on statistics, and are not applicable to the individual. Probably in no disease so much as in consumption is the familiar adage true—"One man's meat, another man's poison."

THE INTERNATIONAL CONGRESS OF OPHTHALMOLOGY.

The Twelfth International Congress of Ophthalmology will be held at St. Petersburg, under the presidentship of Professor Bellarminoff, from August 10th to 15th. Arrangements are being made by which members can get from London to St. Petersburg on advantageous terms. Mr. W. H. H. Jessop, 73, Harley-street, London, W., who is in charge of the negotiations, will be glad to afford any necessary information as well as to receive the names of those intending to be present at the congress.

Mr. Alexander G. R. Foulerton, F.R.C.S. Eng., has resigned his appointment as Director of the Bacteriological and Clinical Pathology Laboratories at the Middlesex Hospital, and has been appointed to a lectureship in the Public Health Department of University College, University of London.

THE Cavendish Lecture will be delivered by Dr. F. W. Mott, F.R.S., before the West London Medico-Chirurgical Society on Friday, June 19th, at 8.15 P.M. in the Kensington Town Hall, on the Causes of Insanity. The lecture will be followed by the annual conversazione.

Dr. T. R. Elliott, F.R.S., will deliver the first biennial Sydney Ringer memorial lecture on Monday next, June 15th, in the lecture theatre of University College Hospital Medical School, at 5 P.M., on the Adrenal Glands. The lecture is open to all qualified medical practitioners and medical students.

Dr. Edwin Goodall will deliver the Croonian lectures before the Royal College of Physicians of London on Tuesdays and Thursdays, June 18th, 23rd, 25th, and 30th, at 5 o'clock, at the College, Pall Mall East, on "Modern Aspects of Certain Problems in the Pathology of Mental Disorders."

PREHISTORIC MAN AND HIS EARLY EFFORTS TO COMBAT DISEASE.*

BY T. WILSON PARRY, M.A., M.D. CANTAB.

The Stone Age.

THE Stone Age must be regarded merely as a stage of culture, as every nation and people on their emerging from an animal to a human level, however low, starts with its "Stone" Age, passes through its "Copper" or "Bronze" Age, thence through its "Early-Iron" Age, till it eventually arrives at its Historic period. The anthropological world is indebted to the late distinguished antiquarian, Lord Avebury, for suggesting the division of the great Stone Age into two parts—namely, the Palæolithic or Old Stone Age and the Neolithic or New Stone Age.

Palæolithic man was a hunter living at first on the banks of rivers ("river-drift man" he was then called); then he took to dwelling in caves (cave man). We find him in this last capacity as an artist, showing much ability and even some genius.

Neolithic man was of a different type. I think he may best be described as a farmer, a builder, and a surgeon. The Neolithic period is divided into three parts: (1) the Campigny period, (2) the Robenhausen period, and (3) the Carnac period. It is this last period that will specially interest us now, as we have absolute and certain proof that during this period the surgical operation of trephining was performed.

Pre-palæolithic Man.

To begin at anything like a beginning we must hark back to times much more remote than these. In pre-palæolithic days man was little above the lower animals. The picture that I have of the earliest primitive man at present is an admixture of Pithecanthropus erectus and the Piltdown lady. With the former's cranial capacity of 850 c.c. and the latter's simian lower maxilla and canine tooth, we are getting dangerously near our cousins the anthropoid apes. A large male gorilla may have a capacity of 600 c.c., and there would therefore be much less distance between him and "the fossil man of Java" than exists between this latter and an average modern European cranium. I need not enter into the controversy as to whether these fossilised human crania belong to the early Pleistocene or late Pliocene period. The geologist has strong inclinations towards the former, while the anthropologist has much to say on the latter. I have faith that there are still to be unearthed anatomical surprises of unparalleled importance which when discovered will necessitate a constant rearrangement of ideas as fresh material is brought to light.

* An abstract of a presidential address delivered before the North London Medical and Chirurgical Society on May 14th, 1914.

Animals' Self-curative Instincts.

It is well known that animals possess strong self-curative instincts. Dogs and cats when indisposed will eat grasses that have a medicinal action usually of an emetic or purgative nature. The fibrous-rooted wheat-grass,[1] *Triticum caninum*, is frequently eaten by the former. If an animal has been injured it is noticed continually to lick the affected part, which is a somewhat crude combination of our modern fomentation and massage. Prehistoric man would most certainly have licked his wounds. Later, when he had lost some of his earliest animal instincts, he would observe what animals did and imitate them. Thus the use of hellebore[2] was believed to have been discovered from the goat.[3] Virgil tells us that dittany was "eaten by wild goats when they were shot with darts."[4] Pliny tells us that bleeding was taught man by the hippopotamus, "that intelligent animal finding himself plethoric, goes out on the banks of the Nile and there searches about for a sharp-pointed reed, which he runs into a vein in his leg, and having thus got rid of a sufficient amount of blood closes the wound with clay." Buffaloes, horses, and camels are exceedingly fond of licking salt. Prezevalsky says: "On the Mongolian camels salt, in whatever form, acts as an aperient, especially if they have been long without it." Livingstone says that "the chimpanzee, soko, or other anthropoid apes will staunch bleeding wounds by means of their finger or of leaves, turf, or grass stuffed into them." Primitive man must have done likewise, only always a little more.

The Instinctive Period of Medicine.

The first period in the history of medicine is known as the Instinctive Period or the Period of Demonology. As embryology epitomises evolution, so the study of the present-day primitive savage unfolds to us the larger history of prehistoric man. It was no doubt the twin mystery of disease and death that first stimulated man to think, that is why the medicine-man and the priest were one and the same individual at the outset. The position of the medicine-man in the tribe must have been a most exalted one. In a fascinating book just published on the American-Indian, called "The Vanishing Race,"[5] this is well shown. "The Indian," it says, "aspires to be a great hunter, he seeks fame as a noble warrior; he struggles for the eagle feathers of distinction, but his greatest longing is to become a medicine-man and know the great mystery." Witchcraft and magic early took a chief part in the treatment of disease and demonology reigned supreme for many millenniums. Demonology is based on "Animism," and this latter briefly consists in the belief in the influence of the spirits of dead persons. Animism has its beautiful as well as its hideous aspect. The wide belief among savage races that inanimate objects, as well as animate beings, are all possessed of a spirit has been well demonstrated by Maeterlinck's excellent allegory "The Blue Bird," which shows the happy side of this creed. The unhappy side is illustrated by the reverence bestowed on spiritual monsters and the propitiation required of them. The three chief theories of disease were: (1) the anger of a disaffected spirit, (2) witchcraft, or (3) offended spirits of dead persons. The Mantira,[3] a low race of the Malay Peninsula, believe that there is a separate disease-spirit for every illness, one for small-pox, one for inflammation of the hands and feet, and one for hæmorrhage; in the last-named case the spirit is thought to fasten itself on the wound of the individual and suck out his blood. The aboriginal New Zealanders[6] had a separate demon for each part of the body to cause disease: Tonga caused headache and sickness; Moko-Tiki was responsible for chest pains, and so on. In Brittany to-day similar pagan ideas are universally accepted, but under different auspices. The Breton's deities are neither Tonga nor Moko-Tiki, but if the Bretons are suffering from boils they offer prayers to St. Maudez; if from fevers they petition St. Gonéry.[7] The earth from the tomb of this latter saint is considered a cure for any kind of fever. It is sold in little muslin bags and tied round the necks of the patients.

Demonology the Reason for Trephining.

It must have been but a short step for the first man, who, firmly believing in demoniacal possession and who, at the same time, suffered either from frequent fits, severe pain in the head of a periodic or paroxysmal nature, chronic hemicrania or unbearable Ménière's disease, to make an effort to free himself from his fetters. Life had become an intolerable burden to him, and he believed there was a devil inside his cranium that was petitioning somewhat persistently for liberty. The first operation must have been troublesome and tedious, not to mention its extreme danger. The medicine-man had to incise the scalp with a sharp piece of flint, arrest the bleeding, and scrape the bone. This would take many hours to perform, but the patient was helpful and anxious to get rid of his devil, and possessed that unflinching stoicism to pain that is characteristic of the savage. If the patient recovered he was reverenced as a hero. If he died his skull was eagerly sought after. The trephined portion was removed by flint saws and pieces of bone, edged by part of the healed cicatrix, were removed. Either a hole was passed through this or a groove made for affixing a cord, so that it might be worn as an amulet to defend the wearer against the disease from which the dead man suffered. The first skull of this kind to which the attention of scientists was drawn was discovered by M. Prunières in the year 1868 in a dolmen near Aiguières. This observer mistook the hole with the smooth edges for an opening that had been made artificially after death for the lips, in the conversion of the skull into a drinking cup, a custom well recognised among savage tribes. It was left to Professor Broca to interpret this, and he showed indubitably that the hole in the skull had been made during life and had been done by scraping.[8]

Neolithic Trephining in Great Britain.

It might have been thought, considering the number of trephined skulls that have been unearthed in France, that the custom would have spread to the British Isles, as only the Channel separated the two countries, and we have evidence

DESCRIPTIONS OF ILLUSTRATIONS.

FIG. 1.—Skull of female (21 years) trephined by flint flake. Time taken 30 minutes.

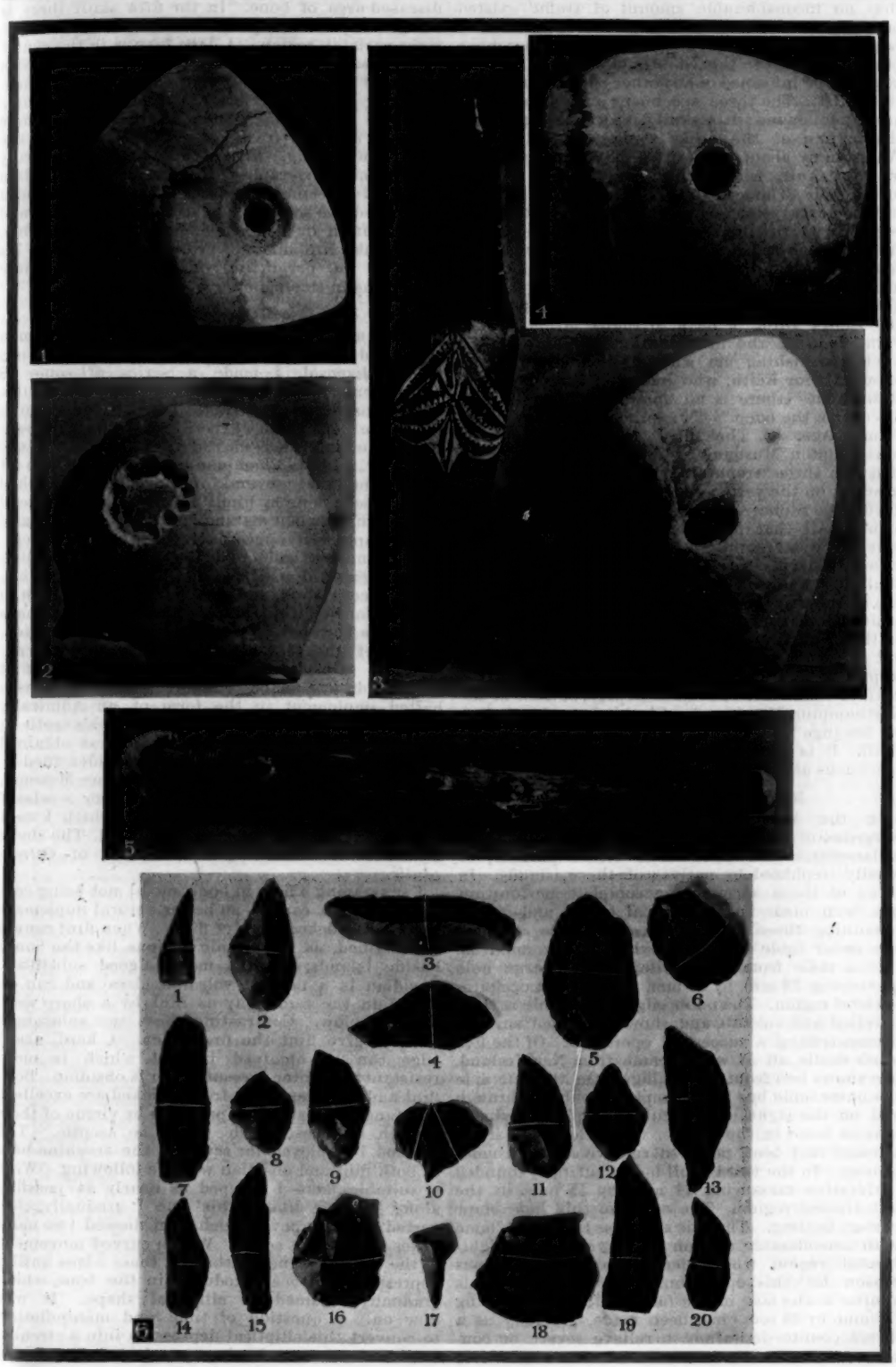
FIG. 2.—Dry skull partially trephined by shark's tooth. Time taken 1½ hours.

FIG. 3.—Skull of male (44 years) trephined by obsidian knife (Admiralty Islands). Time taken 30 minutes.

FIG. 4.—Skull of infant (16 months) trephined by flint flake. Time taken 15 minutes.

FIG. 5.—Hafted shark's tooth.

FIG. 6—Selected Neolithic flint flakes and borers (Coleraine). No. 20 was used in trephining skulls (Figs. 1 and 4).



Illustrations Representing Experiments of Different Kinds of Primitive Trephining with Tools used.

that no inconsiderable amount of traffic existed between the shores in Neolithic times. I have only been able to hear of three such skulls that have been discovered in this country, and would be most happy to be informed of any other specimens should they exist. The three specimens of which I know are the following: 1. A skull that was dredged from the bottom of the docks at Port Talbot, South Wales, in or about 1870–72. I have a photograph of this skull, which has been kindly lent to me by Mr. Thomas Gray. This skull shows a frontal excavation over the right supraorbital region. 2. An interesting specimen showing a ring-trephine, as if an effort had been made to remove a rondel of bone. This specimen was excavated in the autumn of 1863 from a long barrow, near Bisley, by the late Dr. W. H. Paine, assisted by Dr. Henry Bird. I have to thank Mr. A. E. W. Paine, son of the first-mentioned excavator, for kindly furnishing me with a photograph. Professor Arthur Keith, who has seen this specimen, states that "there is no mark of inflammation or disease on the bone." This probably belongs to the Bronze Age. 3. The third specimen is in the Northampton Museum. I can emphatically state that the three trephine holes in the form of a triangle, on the vertex of this skull, were not made during the Stone Age nor by any Stone-Age implements. All that is known of this specimen is that it was found "outside the British Camp called Hunsbery" in Northampton. On a modern skull I have made as exact a model as I can of the three holes, as regards size and relative position, and it is my opinion that they were made on the original not from any demonological reason, but as a means for suspending the skull as a trophy by a Bronze Age or later headsman. I have to thank Mr. Thomas J. George, curator of the Northampton Museum, for his kindness in sending me tracings[9] of General Pitt-Rivers's plates of this skull. It is probable that only one of these three specimens alluded to above is Neolithic.

Melanesian Trephined Skulls.

In the Museum of the Royal College of Surgeons of England are six skulls of modern Melanesians that have been either partially or wholly trephined by natives of those islands. In three of these specimens a complete perforation has been made in the cranial bones, and in the remaining three either the outer table alone or the outer table and diploë have been removed. One, a male from New Britain, has a large hole measuring 28 mm. by 34 mm. in the right occipito-parietal region. The outer edge of this hole is thin, bevelled and smooth, and shows a healed surface, demonstrating a successful operation. Of the five other skulls, all of which came from New Ireland, one shows two frontal scrapings. On the left side the outer table has been completely rubbed through and on the right is a circular scraping leaving a boss of bone in the centre, which looks as if an attempt had been made to remove a small rondel of bone. In the third skull is a beautifully rounded perforation measuring 14 mm. by 15 mm. in the left frontal region. The edges of this hole show perfect healing. There is a diseased patch of bone with considerable erosion in the mid- and right-frontal region which demonstrates the obvious reason for this operation. The fourth skull is similar to the last in the fact that a large scraping (17 mm. by 28 mm.) has been made, probably as a direct counter-irritation to relieve severe or continuous headache, in front of an extensively diseased area of bone. In the fifth skull there is a large elliptical scraping, 48 mm. by 35 mm., in the right parietal region. A deep furrow in the centre of this scraping illustrates the method by which this was done. In the sixth and last specimen there is a large perforation, 23 mm. by 40 mm., over the left frontal region, and part of this hole is filled up with fresh callus formed during the process of healing. All the cases have undoubtedly been done by scraping the bone with obsidian flakes. In Melanesia after the operation has been performed the scalp is replaced and simply bound into position by a bandage made of banana fibre. My thanks are due to Professor Keith for his courtesy in permitting me to describe these specimens in this paper.

Neolithic Methods of Trephining.

Being anxious to ascertain how Neolithic man trephined living subjects with the crude materials at his disposal, I made a series of some 19 experiments both upon recent and dry skulls. (See illustrations.) When showing the results of some of these experiments to Professor Keith he informed me of a pamphlet by the late Dr. Lucas-Championnière[10] in which I would find that several of my experiments had already been done by him. I was quite unaware of this brochure when making my tests. Referring to this pamphlet it appeared to me that Dr. Lucas-Championnière had only experimented with flint. The materials I used besides flint were obsidian, shark's teeth, shell, and slate. Flint I used both in the form of Neolithic scrapers and as a hafted sharp point to a bow-drill. This bow-drill, I may mention, is one of the oldest forms of mechanical contrivance. Obsidian I also used in two ways—first as an ordinary flaked scraper, and secondly as a hafted implement in the form of an Admiralty Island knife. I used two kinds of shark's teeth—a small variety, for an infant's skull, was obtained from the King's Mill Islands, and was identified by Mr. C. Tate Regan, of the Natural History Museum, as belonging to "*Carcharias glaucus* or a related species," while the larger specimen, which I used for adult skulls, was *Galeocerdo arcticus*. The shells I used were beach-worn specimens of *Ostræa edulis*.

For scraping a hole in bone, metal not being considered, there can be no better natural implement than a well-flaked piece of flint. When flint cannot be obtained, as in volcanic regions like the South Pacific Islands, obsidian makes a good substitute. Obsidian is a natural volcanic glass and can be flaked, in the same way as flint, by a sharp well-directed blow. Contrasting these two substances I would give flint the first place. A hard, sharp edge can be obtained in flint which is more resistant to counter-pressure than is obsidian. Both flint and obsidian when freshly flaked are excellent substances for surgical purposes by virtue of their smooth surfaces, which would be aseptic. The method I employed for scraping the trephine-hole in both flint and obsidian was the following. With a suitable flake I scraped as nearly as possible along a single line. This line I gradually converted into a groove, which soon showed two more or less prominent edges. With a curved movement of the scraper I next attacked these edges until a depression had been produced in the bone which gradually assumed an elliptical shape. It was now only a question of time and manipulation to convert this elliptical depression into a circular one, and thence, having penetrated the inner

table of the skull, to expose the dura mater and enlarge the foramen to the size and shape required. As regards the bow-drill I bored a succession of holes, some fifteen in number, in a circular manner on the site chosen. These I enlarged till they touched one another. The next step was to break down the edges between them with a sharp, strong flake, and then by means of sawing and scraping eventually to remove a complete rondel of bone. This is an extremely tedious and clumsy operation, and not in any way calculated to bear comparison with the simpler method of scraping. As regards sharks' teeth as surgical instruments, I am satisfied that there is no more excellent natural implement for boring holes in bone than a hafted shark's tooth. Its keenly serrated edges and its strong, sharp point make it an instrument invaluable to the primitive surgeon. It moreover possesses a natural flange which converts it into a trephine of undeniable utility, for the flange is so placed as to prevent the point penetrating too deeply to the wounding of the dura mater. A ring of holes (as in the case of the bow-drill), packed as closely as possible, followed by breaking down the bridges between them, makes a hole (after removal of the rondel) as clean and neat as the most fastidious chirurgeon could wish. Trephining by shell was probably never attempted by Neolithic man in Europe, though primitive man in the South Pacific Islands certainly used shell for this purpose, and shell knives and lancets for opening abscesses. It took me nearly 25 minutes to trephine the skull of a 9 months old infant, which in time bears most unfavourably with the same operation on a 14 months old child which only took 9½ minutes, or on a 16 months old child, which took 15 minutes. I used slate in one instance, but it took me nearly 50 minutes to make a small hole in the skull of a man of 44 years. The originals of my experiments are exhibited in the Historical Medical Museum, and I have to thank the curator, Mr. C. J. S. Thompson, for his kind loan of aboriginal trephined skulls.

Conclusion.

We have been looking back into the far-away past and have been endeavouring to piece together the history of prehistoric man from specimens of his handiwork that have been heirloomed to us by the sheltering hand of Nature, who has protected them for us either by covering them over with the débris of rock or hiding them under stalagmite or in the deep breccia in the floors of caverns. To this has been added a passing glimpse at the methods of present-day primitive tribes. Tylor says[11]: "The uniformity which so largely pervades civilisation may be ascribed, in great measure, to the uniform action of uniform causes." Thus it is that the combination of these two parallel studies enables us to get a true insight into the life of prehistoric days.

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Crouch End-hill, N.

Sir George Reid, High Commissioner in London for the Commonwealth of Australia, will distribute the prizes to the successful students at Guy's Hospital Medical School on Thursday, July 9th.

THE NEW SCHOOL OF PHYSIOLOGY AT CAMBRIDGE.

ON Tuesday last H.R.H. Prince Arthur of Connaught opened at Cambridge the new school of physiology, which has been presented to the University by the Drapers' Company.

The New Building.

The admirable building, designed by Sir Thomas Jackson, is erected on a site contiguous on one side with the existing laboratory of experimental psychology and on the other with the site allocated to a laboratory of biochemistry, for which the building fund has yet to be obtained. In this way the three great sections of physiological study will be housed in that intimate connexion with each other which modern developments demand, while the beautiful irregular quad of new schools, built on what was formerly a section of Downing Park, takes one step further to completion.

The building is five storeys in height, of the same purplish-red brick as the other schools, relieved with lighter brick adornments and stone dressings, and presents from the outside a businesslike as well as dignified appearance. On the ground floor, in addition to the store-rooms, battery and switch-board rooms, place is found for the electro-physiological department, for an aquarium used in the tank-storage of the marine invertebrates, and for the research rooms in thermo-electricity, where the measurements of the evolution of heat from the tissues can be taken and the influence of diets in this direction estimated. In the electro-physiological department large provision has been made for the study of the electric stimulation of muscles and nerves, and of the electric phenomena which accompany their action. Compressed air can be distributed for use in various manners throughout the building, while all the latest devices in electrometry are provided, including a capillary electrometer, in which vibration has been eliminated while the variations can be registered by photography, a string galvanometer, and a pendulum delivering electric shocks at small intervals of time. On the first floor are situated a large theatre, the professor's rooms, and six private research rooms, with the usual accommodation for weighing, photography, and cold storage. The theatre will allow of a demonstration to a class of 80, and the adjoining room contains a kinematograph. The library is also situated on this floor. The second floor is arranged for the study of the digestive and respiratory system, with rooms allotted for neurological research and research into the special senses and colloids. Three rooms have been designed for the study of respiration, especially with regard to the capacity of the blood to absorb oxygen and carbonic acid. Four mercurial air-pumps are provided in which the blood can be boiled *in vacuo*. In another type of apparatus the gases in small quantities of blood—a few drops—are estimated by expelling the gas from the blood on shaking it with appropriate reagents in a bottle fitted to a gauge. In the centre of the room containing this apparatus are gasometers containing gases of known composition. These gases can be put in suitable flasks and blood exposed to them at a known temperature in order to find the quantity absorbed. There are also on this floor private rooms for the staff, two more private research rooms, a photographic room, and the X ray department. On the two upper floors are

large rooms for classes in histology, the fourth floor having a second and smaller theatre accommodating 50 students. In the large histology room with its galleries 150 students can work simultaneously. Throughout these floors the students are supplied with every new mechanical device.

The Opening Ceremony.

The proceedings commenced in the morning in the Senate House, when Lord Rayleigh, the Chancellor of the University, introduced to the Senate Colonel S. M. Benson, the Master of the Drapers' Company, who made a formal gift of the building to the University. Prince Arthur of Connaught then delivered a short address, in which he alluded to the intimate connexion of the Royal Family with the University, traced briefly the history of the school of physiology, and acclaimed a scientific education as pre-eminently the one which compelled exactness of thought and made half-knowledge an impossible condition. Professor Langley, the professor of physiology, then gave an interesting account of the development of the physiological school at Cambridge, after which Lord Moulton of Bank thanked Prince Arthur for attending to declare the new school of the University open. The degree of LL.D. *honoris causâ* was then conferred upon Prince Arthur of Connaught, Lord Moulton of Bank (an old senior wrangler), Lord Esher, and Colonel Benson. The degree of D.Sc. *honoris causâ* was conferred upon Sir William Osler, Sir David Ferrier, Sir Edward Schäfer, and Professor E. H. Starling. Sir John Sandys, the Public Orator, in each case introducing the recipients with happy Latin phrases. After this the Vice-Chancellor of the University (Dr. Montagu James, Provost of King's College) and the Fellows of the College entertained a large company at luncheon.

Punctually at 3 30 the Vice-Chancellor of the University entered the precincts of the schools with Prince Arthur of Connaught, who immediately opened the door of the new building and admitted thereto a large crowd of ladies, distinguished guests, and members of the University, who were not sorry to take shelter from a cold rain storm. The whole building was thrown open as a going concern, and in every department interesting demonstrations could be seen in actual course at the hands of lecturers, demonstrators, and students. For example, on the ground floor the working and use of the compressed air plant was shown, while in one room Miss Dale demonstrated the electric currents generated in the human heart; in another, Mr. R. A. Peters showed how to determine the relative acidity of any two samples of blood by electrical methods, if sufficiently sensitive; and in another Mr. A. V. Hill and Miss A. M. Hill showed the possibility of measuring by delicate electrical methods the amount of heat given out in a single twitch of a muscle.

On the first floor a demonstration was given of the Lucas pendulum used to discover the rate of conduction of nervous impulses, the recovery of muscle and nerve after stimulation, and other phenomena of excitable tissues. Kinematograph demonstrations were given on this floor during the afternoon. On the second floor Mr. H. Roberts gave a demonstration of the possibility of estimating the chlorides of the blood when only one drop of blood is used; Miss Tweedy gave a demonstration in the use of the ultra-microscope; and Dr. C. G. Douglas showed how blood gas analysis is carried out at high altitudes. The room in which these experiments were being done was stated to be about the size of the Alta Vista hut near the summit of the Peak of Teneriffe, and the conditions reproduced as nearly as possible those of investigations into the properties of the blood of persons living in a rarefied atmosphere at an altitude of 11,000 feet. In another room demonstrations were given by Dr. W. H. R. Rivers on mirror contrast, flicker, and colour blindness, and in another Mr. J. Barcroft explained the modern methods of blood gas analysis. On the third floor microscopic specimens of the tissues of the body were arranged with descriptions appended; and on the fourth floor demonstrations were given by students of the effect of heat, cold, and fatigue on muscle contraction, and of salts on the beating heart.

The large histology room on the third room was used by Professor Langley and Mrs. Langley as a reception- and tea-room, and as the afternoon went on became crowded with well-known members of the University, their many distinguished guests, and a large number of ladies.

The programme of the day closed with a dinner at Trinity College, to which many of the distinguished visitors were bidden.

The Rise of the Cambridge School of Physiology.

The occasion was felt by all present to be one upon which the University might well congratulate itself, while recording sincere thanks to the Worshipful Company of Drapers whose grant for the building and towards its equipment amounted to £23,000. The cost of the splendid and elaborate fittings was about £4000, and has been met partly out of the gift of the Drapers' Company and partly from benefactions received by the University for the completion of a scheme for housing the three departments of physiology, biochemistry, and experimental psychology. The chief of these benefactions emanated from Mr. Otto Beit, Lord Glenconner, Mr. Almeric Paget, and the Worshipful Company of Mercers; while large gifts have been made for the specific endowment of the new school of physiology by Trinity College, Gonville and Caius College, Messrs. Rothschild and Sons, Mr. Marlborough Prior, and Mr. J. F. P. Rawlinson, the Member of Parliament for the University. To the past scientific students of the University the approach to completion of the building plans must give peculiar pleasure, as many of them can remember the actual beginning of the famous Cambridge school of physiology. This dates only from 1870, when Trinity College imported Michael Foster from University College, London, elected him to a fellowship, and equipped two rooms for him as prælector in this subject. Under the inspiration of Foster and his pupils the students multiplied, the prælectorship became a professorship, and in due succession all the laboratories in Cambridge connected with biological study arose. In 1879 the University built additional rooms for the use of the department of physiology; in 1886 further premises were found for histological work; in 1889 a large extension of the physiological laboratory with a lecture theatre to hold 280 students was built; but by 1893, when Foster resigned, to be succeeded by his deputy, the present distinguished professor, Dr. J. N. Langley, the need for more laboratories was severely felt if the department was to maintain its great position and powers of progress. How insufficient the accommodation at last became was pithily described in a note on the school, supplied to the guests at the opening of the building provided by the Drapers' Company. "Already the Physiological Laboratory as then constituted" (the note refers to 1893) "was quite inadequate for the needs of the subject. The classes had outgrown the building, and the rooms for practical instruction were seriously overcrowded. The rooms available for research work were too few, and were not well adapted structurally to modern requirements, and these very soon became wholly insufficient for the Cambridge men engaged in research and for the foreign students who came in increasing numbers to do work in the Cambridge school. The rapid growth of biochemistry, within the subject of physiology, added to the congestion, and this was very imperfectly relieved by the addition in 1907 of a dark basement room for chemical work, and in 1909 of two disused coal-cellars in which important researches in nutrition and in electrophysiology were carried on." From this position the generosity of the Company of Drapers and of a group of other benefactors has now rescued the Cambridge workers in physiology, who see

approaching completion, and completion in splendid form, a scheme for housing the three main departments of physiology in close organic connexion.

MEDICINE AND THE LAW.

Action upon a Restrictive Covenant.

IN the Palatine Court of Chancery at Manchester the Vice-Chancellor, Mr. Stewart-Smith, K.C., heard an action brought by Dr. J. Reid claiming an injunction to restrain Mrs. Mary Lowry from practising medicine within eight miles of Preston or Ashton-on-Ribble, according to the terms of an agreement between them made three or four years ago. Mrs. Lowry before her marriage had become an assistant to the plaintiff, under an agreement by which she bound herself not to practise either in her own name or otherwise within a specified area if she should cease to be so employed. The defendant left the plaintiff's service upon marrying another medical practitioner in the same district, Dr. A. E. Lowry, and it was alleged by Dr. Reid that she had since practised in contravention of her agreement. It was contended by the defendant that she had not so practised, but that in accordance with a verbal permission or arrangement with the plaintiff she had attended cases of emergency when her husband, owing to his engagements or for other reasons, was unable to do so. It was also part of her defence that the agreement relied upon by the plaintiff was wider than was necessary for his protection and therefore void. After evidence had been called and counsel had addressed the Vice-Chancellor the latter suggested the desirability of a settlement being arrived at, and after an adjournment for this purpose it was announced that it had been agreed that the period of the restrictive clause should be reduced to 12 years, that if the defendant's husband died within that period his widow should be able to free herself from the restrictions imposed upon payment of a sum of money to the plaintiff, and also that the restrictions had been so redrafted that Mrs. Lowry would be able to attend her husband's patients in specified circumstances without injuring the plaintiff's practice. Counsel for the plaintiff, in conclusion, stated that his client had not had any desire to limit the scope of Mrs. Lowry's assistance to her husband, and the Vice-Chancellor expressed approval of the settlement and of the course adopted by Dr. Reid in assenting to it.

Adenoids and Parental Responsibility.

At Atherstone recently a labourer was summoned for neglecting to obtain treatment for his daughter, 12 years of age, who was suffering from adenoids and enlarged tonsils. The defendant had been first warned in 1910, and the child had been found to have become worse in 1912, nothing having been done for her. In January, 1913, notice was again given to the defendant, who before the magistrates urged that he had no means wherewith to provide suitable treatment. The bench adjourned the case for a month in order that the father might apply to the guardians for assistance.

A Question of Medical Privilege.

In the Burton-on-Trent county court recently his honour Judge Macpherson, at the hearing of a claim for compensation by a miner, against a firm of colliery proprietors, condemned the furnishing of information with regard to their patients by members of the staffs of voluntary hospitals. In a leading article in THE LANCET of April 4th last, p. 978, comment was made upon the attitude adopted by his honour Judge Mellor upon a somewhat similar occasion in a case in which the medical man who was put in the witness-box by the employer had attended the workman as his private patient, and the decision of Judge Macpherson is, so to speak, complementary to that of his colleague on the bench. In the case heard at Burton-on-Trent the workman had been treated in the Burton infirmary, and the advocate representing the employers was cross-examining a medical witness called on behalf of the workman, basing his questions upon information which admittedly had been supplied by one of the honorary staff of the hospital who had performed an operation upon him. The judge thereupon interposed, saying that he did not think he could allow the questions, and upon being informed that the usual practice had been followed, and that in the case of a hospital payment could be made and an official report obtained, he said: "There should be no difference between a patient in an institution and a patient operated on privately." He afterwards said that he had "never yet heard any justification for a medical man betraying the affairs of a patient," and in giving his decision as to the compensation to be paid to the claimant, again expressed his surprise at employers being able to obtain from hospitals information with regard to the condition of workmen treated in them. He said further that until otherwise instructed by a higher court he would always do his utmost to prevent advocates making use of information obtained in the way indicated. He considered the practice of giving such information to be a plain breach of the confidence expected to exist between a medical man and his patients. Medical practitioners upon the staffs of hospitals have no desire as a rule to figure as witnesses in county courts or elsewhere, or to be asked to furnish information or otherwise to assist in the carrying on of litigation. They will no doubt read with satisfaction the observations of Judge Macpherson, and hope that his attitude towards their evidence will be generally adopted, and that they will be instructed by judicial authority to withhold all information. On the other hand it may be pointed out that the hospital surgeon's evidence is likely to be the best obtainable in the interests of justice and for the purpose of getting at the truth, and that the employer who receives a report in the workman's favour may proceed to pay him compensation without bringing the matter before a judge. On such an occasion the medical man is treated as he should be, as an impartial deponent to facts and a partisan of neither side. Of course, the workman will not call him as a witness if his evidence is likely to be against the claim which is being made for compensation, and will be glad that the information he can give should not be at the disposal of the employer.

ANTE-NATAL HYGIENE AND THE NOTIFICATION OF PREGNANCY.—The council of the county borough of St. Helens have confirmed a resolution of the health committee that midwives should be instructed to notify to the medical officer of health forthwith on being engaged to attend a woman in her confinement, in order that advice may be given to expectant mothers, and suitable arrangements made in certain cases for their assistance.

REPORT OF THE SANITARY COMMISSIONER WITH THE GOVERNMENT OF INDIA FOR 1912.

Of the eight sections into which the Indian Sanitary Report for 1912 is divided the first two, concerning the European and Indian troops, are contributed by the Director of Medical Services in India, the officer formerly known as Principal Medical Officer to H.M. Forces. Section VI., relating to the medical institutions of the country, is by the Director-General, Indian Medical Service. For the remaining five sections Major J. C. Robertson, the Sanitary Commissioner, is directly responsible.

Health of the European Troops in India.

The average strength of European troops during 1912 was 71,001 warrant and non-commissioned officers and men. Their admissions to hospital numbered 547·9 per 1000; the constantly sick in hospital were 28·86, the deaths 4·62, and the invalids sent home 6·68 in ratios per 1000. These ratios were considerably lower than the corresponding figures for the preceding quinquennium (1907–11). The admission rate was rather higher than that for 1911 (524·7), and the constantly sick-rate practically the same (28·81 in 1911); the other two ratios were slightly lower than in the year preceding. The total deaths, amounting to 328, were less than in any former year, the ratio per 1000 (4·62) being also the lowest ever recorded. The most fatal diseases were enteric fever (26 deaths, or 0·37 per 1000), suppurative hepatitis (23), pneumonia (20), appendicitis (19), heatstroke (14), and pulmonary tuberculosis (11). There were also 20 deaths from gunshot wounds and 20 cases of drowning.

On comparing the health statistics of the troops in different parts of India, and taking the average number of men constantly sick in hospital as a guide, it is seen that the Burma Coast and Bay Islands group (Rangoon and Port Blair) is the most unhealthy, with a ratio of 39·3 per 1000, while in the Deccan the average ratio was only 28·4, and in the Southern India group 28·1. The admission ratio was highest in the North-West Frontier, Indus Valley and Rajputana group of stations (793·3 per 1000), and lowest in Bengal and Orissa (463·6). The individual stations of importance that have suffered most sickness have been Peshawar, with an admission ratio of 1163, and 44·1 per 1000 constantly sick; and Nowshera, with corresponding ratios of 934 and 29·4; Lahore, Rawal Pindi, Delhi, and Jhansi had over 800 admissions per 1000 strength. On the other hand, Belgaum had an admission rate of only 264·2, the constantly sick being 17·8; at Kirkee these ratios were 401 and 29·7; at Multan, 420 and 19·9; at Secunderabad, 488 and 28·6.

Principal Diseases.

The chief cause of sickness in India is fever of one kind or another, formerly returned as malaria, but now separated under various headings, in accordance with more exact methods of diagnosis. Of the total proportion of 547 admissions to hospital per 1000 strength those attributable to malaria, sandfly fever, and pyrexia of uncertain origin amounted to 134·1; the cases definitely diagnosed as malaria (82·4 per 1000) were less numerous than in the years immediately preceding, but the sandfly fever prevalence has risen to 30·5 admissions per 1000. The prevention of this fever, as of malaria, is largely a matter of protection by mosquito netting. We are informed that there is a slow but steady increase in their use in barracks; many are provided regimentally and a few by the men themselves out of their own pockets. It is most regrettable, however, to learn that "the Government of India have definitely decided to incur no expense in providing nets for soldiers other than in a few selected places." Among the large stations Lahore, with 302 admissions per 1000 for malaria, suffered most; Jubbulpore (285), Peshawar (276), and Delhi (221) also suffered severely. To these figures should be added the admissions for sandfly fever, which were 6·7 only at Lahore and 23 only at Jubbulpore; at Peshawar they were 265 and at Delhi 109 per 1000. At Nowshera the malaria admissions were not more than 102 per 1000, but those diagnosed as sandfly fever reached the very high ratio of 328, making this station the most fever-stricken of any, next to Peshawar. In a note on the sanitary condition of Peshawar it is stated that the surface drainage is unsatisfactory, but that the antimalarial measures adopted have been beneficial. The further curtailment of irrigation would appear to be necessary, even if the picturesqueness of the station be diminished.

The decrease in enteric fever continues most satisfactorily; the number of cases during 1912 (118, or 1·7 per 1000) was the lowest on record. Paratyphoid fever caused 64 admissions and 2 deaths. The two diseases combined, therefore, gave an admission ratio of only 2·6 per 1000, a figure which is to be compared with 8·5 per 1000 in 1907–11, and with 20·5, the ratio for enteric fever admissions in the decennium 1897–1906. Similarly the enteric and paratyphoid combined death-rate in 1912 was 0·39 per 1000; in the period 1907–11 it was 1·59; and in 1897–1906 it was 5 per 1000, more than 12 times that of the year now under consideration. The largest number of cases at any station was 27, at Fyzabad (30·6 per 1000), most of these occurring in March and May; no account is given of this outbreak. Secunderabad had 16 cases, 7 occurring in October. It is satisfactory to learn that 90 per cent. of the European troops serving in India have been inoculated against enteric fever; the amount of protection afforded may be gauged by the relative figures of incidence and mortality. Amongst inoculated men the admission and death ratios were 1·20 and 0·15 per 1000; amongst the non-inoculated they were 6·69 and 2·67; further, the case mortality in the inoculated was only 12·8, in the uninoculated it was 40, per 1000. So far inoculation against paratyphoid fever does not appear to be effective; of the 64 cases that occurred, all but one had been inoculated. The enteric fever depôts at Naini Tal and Wellington, for the Northern and Southern armies respectively, have continued to be most serviceable. The importance of sending to these depôts cases of pyrexia of uncertain origin, as well as enteric and paratyphoid, is fully recognised; two paratyphoid carriers were detected in this way. No carrier of B. typhosus was discovered during the year. Important work was carried out on the viability of the paratyphoid A bacillus in the fæces of carriers, buried in earth according to the ordinary trenching system as adopted in the plains. While remaining infective for a long period in the cold weather, owing to multiplication of saprophytes they lost infectivity within ten days in the warmer season. The same bacillus did not remain viable in flies fed on infected fæces longer than 24 hours.

A considerable increase is recorded in the prevalence of dengue, for which there were 364 admissions, mostly in Calcutta and Madras. The manner of infection is unknown, and microscopic research has so far not been successful, though there is reason to suspect conveyance by some kind of sandfly. It is most satisfactory to learn that not a single case of rabies occurred among the European troops, though 81 men and 14 officers underwent antirabic treatment for bites by suspected animals. There were no admissions for beri-beri, but 60 cases of multiple neuritis occurred, chiefly in Calcutta and other stations in Bengal; there were two deaths from heart failure. As to its causation, the writer of the report recommends suspension of judgment, but suggests that it may be due to the absence of some essential principle, or "activator," from certain foods. The cases occur consistently in certain areas where climatic conditions favour a rapid deterioration in the foodstuffs. A marked improvement is noticeable in two allied infections, dysentery and liver abscess. For the former the admissions were only 5·2 per 1000; in 1908 they had been 14·4, and in the period 1907–11 they had averaged 10·5 per 1000. For liver abscess the admissions were 0·7 per 1000; in 1908 they had been 1·7 per 1000. This reduction is probably largely due to the great increase in temperance in alcohol consumption that has been so marked a feature in recent years. A corresponding diminution in venereal disease is no doubt associated with the same factor. The admission-rate in 1912 was 55·5 per 1000; in 1907–11 it was 67·8; in 1897–1906 it had been 273 per 1000. There was a slight increase, it must be admitted, over the ratio for 1911. The usual great variation in prevalence is recorded. In Burma (excluding Rangoon) there were 107 admissions per 1000; in Meerut, Ambala, Rawal Pindi, &c., there were only 49·6 per 1000. The salvarsan treatment,

with subsequent use of mercury and iodides, has been carried out satisfactorily.

The number of men invalided home was the lowest on record, amounting to only 474 for all causes; in 1904 the corresponding number had been 2506. This improvement (and saving of expense) has been largely due to the policy at present adopted of sending as many men as possible to the hills during the hot season.

Health of the Indian Army.

The average strength of the troops composing the Indian army in 1912 was 132,232. From this force the admissions to hospital were at the rate of 547·5 per 1000, a slight increase over the rate for 1911 (515·8), but below the average for the quinquennium 1906–1910, which was 628·2. The number constantly sick was 20·1, and the invaliding ratio was 4·61 per 1000, both of these ratios being slightly in excess of those for the preceding year (19·8 and 4·43 respectively), but below the quinquennial averages of 21·9 and 6·07. The death-rate, 4·42, is the lowest hitherto recorded; for the quinquennium 1906–1910 it had been 6·14, and down to 1903 it had never been less than 10 per 1000. The chief causes of sickness during the year were the same as usual—namely, malaria (86·9 admissions per 1000), to which may be added pyrexia of uncertain origin (44·1) and sandfly fever (10); next, respiratory diseases (26·2), dysentery (16·7), and venereal diseases (14·4). The diseases that caused most deaths were pneumonia (0·83 per 1000), enteric fever (0·47), cholera (0·29), malaria (0·26), and tubercle of the lungs (0·24). The Northern army showed a higher admission-rate (633·8) than the Southern army (505·8), according to the experience of previous years; but the death-rate in the former (4·48 per 1000) was below that in the latter (4·81). The province of Bengal and Orissa showed the highest admission ratio of 817·3 per 1000, while in the adjoining area, known as the Gangetic Plain and Chota Nagpur, the corresponding ratio was the lowest, being only 446·4. This enormous difference was due to the high prevalence of malaria and uncertain pyrexia in the former area (chiefly in Calcutta), and their relative rarity in Lucknow and Fyzabad. Malaria was especially prevalent in Delhi (367 admissions per 1000), Dera Ismail Khan (403), and Fort Dufferin (353). There was on the whole considerably less fever during 1912 than in recent years, partly due to natural causes, but partly also, no doubt, to the measures that have been vigorously taken in cantonments all over the country to keep down mosquitoes. The causes for these special outbreaks seem to have been fairly satisfactorily determined. At Port Blair, for instance, a musketry camp was pitched within 50 feet of an anopheles-infected nullah. At Delhi fever occurred chiefly among the native infantry, whose lines at Daryaganj are near the swampy ground adjoining the Jumna, and have a malaria-stricken population in the bazar immediately alongside. A great increase is recorded in the occurrence of sandfly fever, for which there were 1316 admissions, compared with 114 in 1911. The stations most affected were Meerut (517) and Jullundur (271). Probably the large number of cases returned "was due mainly to greater attention being paid to slight cases of fever, which in former years would either have escaped notice and would not have been admitted to hospital or would have been included under other heads." There was less enteric fever (243 admissions and 62 deaths). The Gurkhas at Almora had 13 cases; at three other stations the native troops suffered more than has hitherto been usual; in each case (Aurungabad, Secunderabad, and Kohat) a polluted water-supply was considered to be the cause. Dengue showed a great increase—398 cases compared with only 2 in 1911. The 40th Pathans at Calcutta had 273 admissions, but the actual mode of infection was not demonstrated. Plague caused only 28 admissions and 18 deaths. A considerable amount of inoculation has been carried out, especially when the disease broke out in a station. Pulmonary tubercle remains at a low prevalence, 2·0 admissions per 1000, or 262 in all. As usual, the Gurkhas suffered most (4·1 per 1000 with 0·84 death), the rest of the Indian army furnishing only 1·7 admissions and 0·16 death. Pneumonia continues to be the most fatal disease among native troops, the death-rate being 0·83 per 1000, a considerable improvement, however, on the decennial ratio for 1901–10, which was 2·26 per 1000.

Health of the General Population.

The birth-rate for British India rose from 38·58 per 1000 in 1911 to 38·95 in 1912, the mean ratio for the preceding quinquennium having been 38·04. Since the issue of the previous report the boundaries and designations of some of the Bengal provinces have been altered, so that a comparison with statistics of the years immediately preceding cannot be made. "Eastern Bengal and Assam" has been abolished and the new administrative areas are termed Bengal, Assam, and Bihar and Orissa. The highest birth ratio was 48·24 per 1000 in the Central Provinces; in Madras it was only 30·90. The death-rate for British India was 29·71, an improvement on the ratio for the previous year (32·01) and for the preceding quinquennium (34·28). The ratio was highest in the Central Provinces and Berar (42·34). In the North-West Frontier Province it was only 23·29 and in Madras Presidency 24·3 per 1000. Of the total death-rate (29·71 per 1000), fever accounted for 16·49. In Bengal the fever death-rate was 21·16 and in the United Provinces 20·66. On the other hand, in Madras it was only 7·6 and in Lower Burma 8·35. There were 263,037 deaths from plague, giving a ratio of 1·10 per 1000, compared with 3·07 in 1911. The prevalence was chiefly in the United Provinces (2·45 deaths per 1000), Bihar, and the Punjab. Cholera caused 407,769 deaths (1·71 per 1000), Bombay, Central Provinces, Assam, Bihar, and Bengal being chiefly affected, in the order named. Small-pox caused 89,357 deaths (0·37 per 1000), an increase over the mortality in 1911, which was 0·25 per 1000; it prevailed chiefly in the Punjab (1·57 deaths per 1000).

The health statistics of Delhi are of interest in view of the fact that it is now the official capital of the country. Its general death-rate (43·74 per 1000 for the city, 39·26 for the district, including the city) is to be compared with the general death-rate for British India (29·71) and the general death-rate for towns and municipalities (33·07). These are the figures for 1912. For the preceding quinquennium the death-rate for the city was 55·34, and 55·29 for the district, including the city; the general death-rate for British India was 34·28, and the general death-rate for towns and municipalities 36·48. No doubt extensive sanitary works will be undertaken to reduce this comparative unhealthiness of the existing city of Delhi, which would otherwise be a menace to the health of the New Delhi that is to come into being alongside of it. A special health department has already been created for the old city and the temporary capital on its north side, and the new works in course of construction to the south are in charge of special health officers.

Indian Jails.

The total prison population of India and Burma, including the Andamans, during 1912 was 103,906, the death-rate being 18·36 per 1000, compared with 21·76 in the decennium 1902–11. If the Andaman islands settlement be excluded the death-rate was only 16·74; this is the lowest ever recorded. In the Assam jails the ratio was as high as 38·92; in those of the Gangetic Plain the mortality was only 12·26; and in Southern India only 12·03. The chief causes of death were pulmonary tubercle (3·8 per 1000), dysentery (2·59), and pneumonia (1·72). The chief causes of sickness were malaria (105 admissions per 1000), ulcer, abscess and boil (61), and dysentery (55). Malaria showed an improvement over former years, except in Bengal, the Punjab, and the North-West Frontier Province. Pulmonary tuberculosis is still rather more prevalent than during the decennium 1902–11. In the Punjab jails the tuberculous admissions were 17·5 and the deaths 5·16 per 1000; in Bihar and Orissa these ratios were 13·6 and 3·96 respectively. Major W. C. H. Forster, I.M.S., has reported on the prevalence of tuberculosis in the jails of the Punjab, and attributes it partly to overcrowding and general insanitary conditions, and partly to infection. The local government has sanctioned the construction of a special jail for tuberculous patients. Small outbreaks of cholera occurred in the Vizagapatam and Ahmedabad jails, attributed to flies in each case.

The present report, prepared by Major J. C. Robertson, I.M.S., Sanitary Commissioner with the Government of India, is a model of condensation, and is extremely well printed; an excellent map is prefixed, which increases its interest.

MAY AT HOME AND ABROAD.

At Home.

THE rains of early May, after the long drought of April, were very welcome, and although they were not generally heavy did much for the agriculturist. After the 8th or 9th the weather was nearly continuously dry until towards the end of the month, and the subsequent rains, accompanied locally by sharp thunderstorms, swelled the total to nearly the May normal. As is usual, the month brought both hot and cold spells, according to the direction of the main wind current and the state of the sky. The first week was moderately warm, the second cold, and the rest of the period mostly summer-like until the sudden drop of temperature following the thunderstorms of the 24th and 25th. Both the days and nights for a time during the last week were very cold for the time of the year, and frost, which had until then been either entirely absent or too slight and local to do much damage to vegetation, became severe and widespread, and it is to be feared that great injury was wrought to fruit trees and early potatoes in certain Midland and Northern districts. In the London area, however, there was no frost sharp enough to do much damage, and at Kew the lowest point reached by the sheltered thermometer was 36° on the 26th. It is rare that all the elements agree so well with the average as was the case at Kew during May. The mean maximum temperature, 62°, was just 1° above the normal, while the mean minimum, 45°, was equal to it, and the total rainfall, 1·75 in., was also the same as the normal. The sunshine differed very little, the 194 hours recorded being only seven hours below the average. The highest shade temperature was 80° on the 22nd—a reading 31° above that of the coldest day on the 9th. Bath was as warm as Kew during the daytime and only a degree colder at night, and its total rainfall was rather less. Its sunshine, however, was lower, although only by 14 hours. The Midlands, as represented by Nottingham, had a mean maximum temperature of 60° and a mean maximum of 42°, a total rainfall of about 1·7 in., and a large amount of sunshine. At Nottingham the record was 15 hours higher than at Kew. The extreme south-west of England enjoyed a dry and very sunny month. At Torquay the total hours of sunshine amounted to 225, at the Scilly Islands to 222, and at Newquay to 202 hours, while in the Channel Islands the record was more than 230 hours. The mean minimum temperature at Torquay, Scilly, and Newquay was 48°, but Torquay was the warmest spot of the three during the daytime, having a mean maximum temperature of 61°, against 58° at Scilly and 57° at Newquay. Jersey was very slightly warmer both during the day and night.

Abroad.

Paris had many very warm days, the highest shade temperature being 84° on the 22nd, and the mean maximum for the month 63°, or a degree higher than at Kew. The mean minimum, however, was a trifle lower than the corresponding figure at Kew. The change from heat to relative cold was almost as great after the 25th as in this country. Few days were sunless, and on several there was scarcely a cloud, but the total amount of sunshine was only three more than at Kew and less than in many parts of this country. Paris had more frequent rain than London, and also a larger aggregate. At Berlin also the weather was more rainy than in London, and the total amounted to as much as 3·7 in. Changes of considerable magnitude in temperature were rather frequent, but the mean for the month was almost identical to that at Paris. The mean minimum was the same, and the mean maximum 1° higher. No frost occurred in either city. Vienna, although farther to the south, was appreciably colder than Berlin during the day, its mean maximum temperature being no higher than 59°, and the highest reading for the month 75°. At night, however, it was relatively mild, its mean minimum temperature being the same as that at Paris and Berlin. Rain fell on 14 days and yielded a total of 3·6 in. In the south-west of France there was a marked outburst of heat on the 22nd, the same day as the maximum in this country. At Biarritz the thermometer rose to 90°, but on the day following it got no higher than 66°. The mean maximum at that resort was 66° and the mean minimum no lower than 52°. Rain was never long absent, and the total for the month exceeded 3 in. Still further south, at Rome, the days were as hot as those of a warm July in England. Readings above 80° were common, and the mean maximum was as high as 72°. Very few of the nights were at all cold, and the mean minimum temperature was no lower than 55°. Italy generally had a fairly normal month, although rain, never very unwelcome in June, was perhaps more frequent than usual. The hottest days were experienced early in the month and after the middle, the end being comparatively cool.

ROYAL COMMISSION ON VENEREAL DISEASES.

AT the fortieth meeting of the Royal Commission on Venereal Diseases evidence was given by Dr. Dubois Havenith, of Brussels, who was secretary to the International Congresses of 1899 and 1902 dealing with venereal diseases.

Dr. Dubois Havenith reviewed the principal preventive measures for dealing with ordinary infectious diseases—viz., notification, isolation, disinfection, and general sanitary measures aiming at combating all unhealthy conditions; of these he said in the case of syphilis disinfection, by which he meant the getting rid of contagious lesions and the sterilising of contaminated objects, was essential. In effect, disinfection in the case of syphilis consisted in treatment. Dr. Havenith laid stress on the need for early diagnosis, free and readily accessible treatment, and supervision of the treatment for such time as might be necessary. For the purpose of early diagnosis it was necessary to make adequate provision of laboratories in which bacteriological and other tests could be carried out. The discovery of the existence of the disease should be followed immediately by treatment, and it was necessary to arrange for clinics which would be open after the ordinary hours of labour. In order that patients, who were often negligent or ill-instructed, should not abandon their treatment it was desirable to introduce some measure of control or surveillance. Such a system was already in operation at the dispensary founded by Professor Malvoz at Liége,[1] where arrangements had been made, with the consent of the patients, for keeping in touch with them, for the purpose of giving advice, for submitting them to the investigations necessary to determine the permanence of the cure, for warning them against contracting marriage too early, and so on. It had been found in practice that the scheme worked well and that patients were willing to fall in with the arrangements. Dr. Havenith thought that it was very important that the public should be enlightened upon the gravity of syphilis both from the individual and the public point of view, but it was equally important that it should be realised that syphilis was a curable disease, that as a rule it was avoidable, and that if properly treated it ceased to be contagious.

[1] THE LANCET, May 9th, 1914, p. 1343.

THE Tenth International Congress of Otology will be held in Hamburg from Sept. 5th to 8th, 1915. The International Rhino-Laryngological Congress, to which reference was made in an annotation in THE LANCET of May 30th (p. 1554), will be held in the same place immediately afterwards—viz., from Sept. 9th to 12th.

UNIVERSITY OF LONDON.—An advanced lecture entitled Some Problems in Cardiac Physiology (being contributions to a study of the relations which exist between the various chambers of the Mammalian heart) will be given in the Physiological Laboratory of the University, South Kensington, S.W., by Mr. A. F. Stanley Kent, M.A. (Henry Overton Wills Professor of Physiology in the University of Bristol), at 5 P.M., on Thursday, June 18th. Admission free, without ticket. The last two lectures of the course of advanced lectures by Professor Brodie, F.R.S., on The Gaseous Exchanges of the Body, in the Physiological Laboratory of King's College, Strand, W.C., will be given on Monday, June 15th, and Thursday, June 18th, at 4.30 P.M., instead of on the dates previously announced.

Public Health.

ANNUAL REPORTS OF MEDICAL OFFICERS OF HEALTH.

County Borough of St. Helens.—The report relating to the health in 1913 of this well-known industrial borough in Lancashire (with a population now close upon 100,000) is made by Dr. H. J. Cates, who succeeded Dr. J. J. Buchan as medical officer of health in July of that year. It contains many matters of interest. Under the heading of "food poisoning" is described the illness of 20 persons in eight families, traced to eating corned beef obtained from a 6 lb. tin which was sold in portions by retail at a small shop in Parr. The tin was not opened until the meat was required by the first of the purchasers, and all those affected seem to have obtained and consumed the meat on the same day. It was normal in appearance and bacteriological examination gave no evidence of the presence of any organisms likely to give rise to the illnesses which occurred. On the other hand, specimens of blood from those affected reacted with certain of the organisms of the coli group, and the illness commenced at comparatively short intervals after the meat had been consumed, usually two hours; in the shortest case three-quarters of an hour, and in the longest five hours. It appeared probable, therefore, that the meat contained bacterial toxins, undestroyed by the process of cooking at the factory where it was canned. St. Helens has a public abattoir, with associated cold stores, at which thorough inspection of meat takes place, with satisfactory results. As usual, however, in English towns, the value of the abattoir is diminished by the continued existence of private slaughter-houses and by the use of places outside the borough for the preparation of meat which has not been inspected. The death-rate of St. Helens from pulmonary tuberculosis was 1·0 per 1000 during the year, and the total deaths recorded 100. In the same period 253 primary notifications were received, and it is noteworthy that 30 of the deaths occurred in persons concerning whom no notification was made, while in other 35 deaths the notification only preceded the death by a few weeks. Similar evidence of the large proportion of tuberculosis cases which must escape notification is afforded by the figures for non-pulmonary disease, of which 164 notifications were received during a period in which 90 deaths occurred. It is to be expected that the further development of the tuberculosis dispensary work, which is now carried out on new and well-equipped premises, will lead to earlier discovery and treatment of all forms of tuberculosis. Dr. S. J. C. Holden contributes an appendix to the report on the "after-care of the consumptive," in which the remedies for the disabilities of the tuberculous case after leaving the sanatorium are discussed. Dr. Holden suggests that the difficulty which these patients often have in maintaining their improved health when they return to defective or overcrowded dwellings might be met by provision of special cottages with open air rooms as part of municipal housing schemes, or by contribution by the local authority which will enable them to move to superior houses at higher rents, or again by municipal lodging-houses specially adapted for tuberculous cases, possibly built as an adjunct to the sanatorium. Such proposals certainly seem to follow logically on the general provision of sanatorium treatment, although some limit must be placed on the consideration given to the tuberculous at the expense of the healthy. It may perhaps be added that the special housing arrangements suggested for persons returning to work after sanatorium treatment are hardly likely to diminish that "unfounded fear" of employers of engaging tuberculous persons which Dr. Holden energetically attacks, and we are not sure that his further suggestion that the local authority should recruit its tram-drivers and tram-conductors from the sanatorium would receive public support. St. Helens had in 1913 a high birth-rate, 32·16. The rate of infant mortality, 155 per 1000 births, was, however, also considerable. The death-rate of infants from "premature birth" was higher than the corresponding rate in any of the county boroughs in England and Wales, and these deaths formed 22 per cent. of the total deaths under one year of age. Dr. Cates ascribes a large share of the infant mortality to what are collectively known as ante-natal causes, closely related to the physique and home circumstances of the mothers. Of the total births occurring in the borough during the year 98·8 per cent. were attended by midwives, a higher proportion than we remember to have seen recorded elsewhere. Stillbirths notified by midwives amounted to 4·6 per cent. of the births attended, the proportion varying considerably in the practice of different midwives. Dr. Cates reports that maternity benefit has already proved of great assistance in providing the necessary medical aid, clothing, and food.

Borough of Stafford.—Dr. F. M. Blumer reports considerable activity in applying the Housing Acts in this borough, but the making of closing orders in respect of insanitary property is delayed by the absence of suitable working-class house accommodation elsewhere. During the year the Local Government Board approved plans for the erection of 60 working-class dwellings, some being let at rentals of 3*s.* 9*d.* and 4*s.* 3*d.* a week, according as they have two or three bedrooms. Another batch of 40 cottages has been decided upon, and Dr. Blumer considers that this action by the town council has created a strong public opinion "which is acting as a driving power to insist on the provision of a sanitary house and surroundings for every family." At the same time, the report realises that however satisfactory the houses may be, there is a large class of tenants which would never attempt to keep them clean, and urges that children must now be educated scrupulously to appreciate cleanliness if slum conditions are to be abolished in the next generation.

Borough of Kingston-upon-Thames.—Special care is given to sewage treatment in this borough, which is sewered on the separate system. At the disposal works, which are in the centre of the town and adjoin the public gardens, the sewage is deodorised before pumping by mixture with charcoal and clay. It is then precipitated with sulphate of alumina, manufactured at the works, in eight large settling tanks, the effluent from which is treated in percolating filters before discharge into the Thames. The sludge is pressed and barged away to a fertiliser factory. The filtered effluent contains, it is stated, only about 1 part of albuminoid ammonia per 1,000,000, and is clear, sparkling, and free from odour. In commenting on provision for infectious diseases, Mr. H. B. Collins states that isolation of ordinary cases of scarlet fever and diphtheria has not been found necessary. Most of the fatal cases of diphtheria are moribund when notified—a somewhat unusual experience, and one which it might be thought would no longer be met with if the reception of diphtheria cases into hospital was regarded as a normal and not as an exceptional proceeding. Out of 898 births during the year as many as 150 were not notified under the terms of the Notification of Births Act. It is suggested that this is the result of dislike to the Act on the part of some of the medical men in the town, but Mr. Collins points out that the Act has been in operation for five years, and that to withhold notification merely as a protest is now only to give trouble to officials who have to carry out the Act but were not responsible for its terms.

VITAL STATISTICS.

HEALTH OF ENGLISH TOWNS.

IN the 97 English and Welsh towns with populations exceeding 50,000 persons at the last Census and whose aggregate population at the middle of this year is estimated at 18,120,069 persons, 9304 births and 4636 deaths were registered during the week ended Saturday, May 30th. The annual rate of mortality in these towns, which had steadily declined from 15·1 to 13·9 per 1000 in the five preceding weeks, further fell to 13·3 per 1000 in the week under notice. During the first eight weeks of the current quarter the mean annual death-rate in these towns averaged 14·3, against 13·4 per 1000 in London during the same period. Among the several towns the death-rate during the week under review ranged from 5·1 in Edmonton, 5·2 in Bath, 6·5 in Acton and in Willesden, 6·8 in Enfield, and 7·5 in Gillingham, to 18·9 in Salford, 19·9 in Wigan, 20·1 in Sunderland, 21·0 in Middlesbrough, and 21·7 in Oldham.

The 4636 deaths from all causes were 198 fewer than the number in the previous week, and included 391 which were referred to the principal epidemic diseases, against 421 and 468 in the two preceding weeks. Of these 391 deaths, 139 resulted from measles, 111 from whooping-cough, 52 from infantile diarrhœal diseases, 47 from diphtheria, 31 from scarlet fever, and 11 from enteric fever, but not one from small-pox. The mean annual death-rate from these diseases was equal to 1·1, against 1·2 and 1·3 per 1000

in the two preceding weeks. The deaths attributed to measles, which had been 146, 138, and 143 in the three preceding weeks, fell to 139, and caused the highest annual death-rates of 1·0 in Liverpool and in Leeds, 1·1 in Manchester and in Sheffield, 1·7 in Wigan and in Rochdale, and 2·8 in Warrington and in Burnley. The deaths referred to whooping-cough, which had been 146, 143, and 144 in the three preceding weeks, declined to 111; of this number, 16 occurred in London, 12 in Manchester, 9 in Liverpool, 7 in Leeds, 7 in Sheffield, and 5 in South Shields. The fatal cases of diarrhœa and enteritis (among infants under 2 years), which had been 59, 69 and 83 in the three preceding weeks, fell to 52, and included 16 in London and 3 each in West Ham, Liverpool, and Middlesbrough. The deaths attributed to diphtheria, which had been 44, 31, and 51 in the three preceding weeks, fell to 47, of which 10 were registered in London, 4 in Manchester, and 3 each in Stoke-on-Trent, Birmingham, Liverpool, and Hull. The deaths referred to scarlet fever, which had been 27, 33, and 34 in the three preceding weeks, fell to 31; 6 deaths were recorded in London, 5 in Manchester, 3 in Sheffield, 3 in Middlesbrough, and 2 each in Birmingham, Liverpool, and Salford. The fatal cases of enteric fever, which had been 13, 7, and 13 in the three preceding weeks, were 11 in the week under notice, and included 4 in London and 2 in Oldham.

The number of scarlet fever patients under treatment in the Metropolitan Asylums and the London Fever Hospitals, which had been 2901, 2862, and 2909, at the end of the three preceding weeks, was 2910 on Saturday, May 30th; 377 new cases were admitted during the week, against 398, 349, and 415 in the three preceding weeks. The hospitals also contained on the 30th ult. 1086 cases of diphtheria, 367 of whooping-cough, 93 of measles, and 40 of enteric fever, but not one of small-pox. The 1026 deaths from all causes in London were 71 fewer than in the previous week, and corresponded to an annual death-rate of 11·8 per 1000. The deaths referred to diseases of the respiratory system, which had been 221, 190, and 188 in the three preceding weeks, further fell to 165 in the week under review, and were 21 fewer than the number in the corresponding week of last year.

Of the 4636 deaths from all causes in the 97 towns, 173 resulted from different forms of violence, and 381 were the subject of coroners' inquests, while 1387 occurred in public institutions. The causes of 33, or 0·7 per cent., of the total deaths were not certified either by a registered medical practitioner or by a coroner after inquest. All the causes of death were duly certified in Sheffield, Leeds, Bristol, West Ham, Bradford, Hull, Newcastle-on-Tyne, and in 72 other smaller towns. Of the 33 uncertified causes of death, 8 were registered in Birmingham, 5 in Liverpool, and 2 each in St. Helens, Rochdale, Barrow-in-Furness, and Darlington.

In the 97 English and Welsh towns 7430 births and 4586 deaths were registered during the week ended Saturday, June 6th. The annual rate of mortality in these towns, which had declined from 15·1 to 13·3 per 1000 in the six preceding weeks, further fell to 13·2 per 1000 in the week under notice. During the first nine weeks of the current quarter, the mean annual death-rate in these towns averaged 14·2, against 13·3 per 1000 in London during the same period. Among the several towns the death-rate last week ranged from 3·7 in Eastbourne, 5·2 in Ilford, 5·9 in Hornsey, 6·8 in Enfield, and 7·1 in East Ham, to 18·8 in Liverpool, 19·2 in Stoke-on-Trent, 19·7 in Carlisle, 19·9 in Lincoln, and 21·1 in Oldham.

The 4586 deaths from all causes were 50 fewer than the number in the previous week, and included 401 which were referred to the principal epidemic diseases, against 468 and 391 in the two preceding weeks. Of these 401 deaths, 131 resulted from measles, 117 from whooping-cough, 80 from infantile diarrhœal diseases, 38 from diphtheria, 26 from scarlet fever, and 9 from enteric fever, but not one from small-pox. The mean annual death-rate from these diseases last week was equal to 1·2, against 1·3 and 1·1 per 1000 in the two preceding weeks. The deaths attributed to measles, which had been 138, 143, and 139 in the three preceding weeks, further declined to 131 last week, and caused the highest annual death-rates of 1·2 in Middlesbrough, 1·9 in Burnley and in Barnsley, 2·1 in Bootle, and 3·3 in Rochdale. The deaths referred to whooping-cough, which had been 143, 144, and 111 in the three preceding weeks, rose to 117 last week; the highest recorded death-rates from this cause were 1·3 in Gateshead, 1·4 in Oldham and in South Shields, 1·7 in Exeter, and 1·9 in Barnsley. The fatal cases of diarrhœa and enteritis (among infants under 2 years), which had been 69, 83, and 52 in the three preceding weeks, rose to 80 last week, of which 26 were recorded in London, 7 in Birmingham, 6 in Liverpool, 5 in Cardiff, 4 in Manchester, 3 in Leeds, and 3 in Hull. The deaths attributed to diphtheria, which had been 31, 51, and 47 in the three preceding weeks, further fell to 38 last week, and included 11 in London, 3 in Manchester, and 2 each in Bournemouth, Birkenhead, Liverpool, and Leeds. The deaths referred to scarlet fever, which had been 33, 34, and 31 in the three preceding weeks, further fell to 26 last week; 4 deaths occurred in Liverpool, 3 in London, 3 in Oldham, 2 in Nottingham, and 2 in Manchester. The fatal cases of enteric fever, which had been 7, 13, and 11 in the three preceding weeks, further declined to 9 last week, but showed no excess in any of the large towns.

The number of scarlet fever patients under treatment in the Metropolitan Asylums and the London Fever Hospitals, which had been 2862, 2909, and 2910 at the end of the three preceding weeks had further increased to 2970 on Saturday last; 339 new cases were admitted during the week, against 349, 415, and 377 in the three preceding weeks. These hospitals also contained on Saturday last 1105 cases of diphtheria, 360 of whooping-cough, 100 of measles, and 32 of enteric fever, but not one of small-pox. The 1098 deaths from all causes in London were 73 in excess of the number in the previous week, and corresponded to an annual death-rate of 12·7 per 1000. The deaths referred to diseases of the respiratory system, which had declined from 221 to 165 in the four preceding weeks, rose to 179 in the week under notice, and were 17 in excess of the number in the corresponding week of last year.

Of the 4586 deaths from all causes in the 97 towns, 194 resulted from different forms of violence, and 388 were the subject of coroners' inquests, while 1331 occurred in public institutions. The causes of 32, or 0·7 per cent., of the total deaths were not certified either by a registered medical practitioner or by a coroner after inquest. All the causes of death were duly certified in London and in its 14 suburban districts, in Sheffield, Leeds, Bristol, Bradford, Hull, Newcastle-on-Tyne, and in 57 other smaller towns. Of the 32 uncertified causes of death last week, 8 were registered in Liverpool, 3 in Birmingham, 3 in Blackburn, 2 in Reading, and 2 in Sunderland.

HEALTH OF SCOTCH TOWNS.

In the 16 largest Scotch towns with an aggregate population estimated at 2,293,200 persons at the middle of this year, 1228 births and 686 deaths were registered during the week ended Saturday, May 30th. The annual rate of mortality in these towns, which had been 16·2, 15·3, and 16·1 per 1000 in the three preceding weeks, declined to 15·6 per 1000 in the week under notice. During the first eight weeks of the current quarter the mean annual death-rate in these towns averaged 16·0, against a corresponding rate of 14·3 per 1000 in the 97 large English towns. Among the several towns the death-rate during the week under review ranged from 5·9 in Clydebank, 8·5 in Leith, and 11·3 in Motherwell, to 20·6 in Paisley, 21·6 in Hamilton, and 24·1 in Kirkcaldy.

The 686 deaths from all causes were 23 fewer than the number in the previous week, and included 56 which were referred to the principal epidemic diseases, against 56 and 62 in the two preceding weeks. Of these 56 deaths, 23 resulted from whooping-cough, 17 from measles, 7 from infantile diarrhœal diseases, 5 from scarlet fever, and 4 from diphtheria, but not one from enteric fever or from small-pox. The mean annual death-rate from these diseases was equal to 1·3, against 1·1 per 1000 in the 97 large English towns. The deaths attributed to whooping-cough, which had been 17, 18, and 10 in the three preceding weeks, rose to 23, and comprised 19 in Glasgow, 2 in Paisley, and 2 in Coatbridge. The deaths referred to measles, which had been 31, 20, and 27 in the three preceding weeks, fell to 17; 7 deaths were registered in Glasgow, 3 in Dundee, 3 in Paisley, 2 in Edinburgh, and 2 in Hamilton. The fatal cases of diarrhœa and enteritis (among infants under 2 years), which had been 4, 6, and 14 in the three preceding weeks, fell to 7, of which 4 occurred in Glasgow and 2 in Aberdeen. The deaths attributed to scarlet fever, which had increased from 2 to 7 in the four preceding weeks, fell to 5, and included 2 in Glasgow. The 4 deaths referred to diphtheria, of which 2 were recorded in Glasgow, were 2 below the average in the earlier weeks of the quarter.

The deaths referred to diseases of the respiratory system, which had been 116, 104, and 107 in the three preceding weeks, declined to 95 in the week under notice; and 33 deaths resulted from various forms of violence, against numbers increasing from 16 to 32 in the three preceding weeks.

In the 16 largest Scotch towns 1293 births and 702 deaths were registered during the week ended Saturday, June 6th. The annual rate of mortality in these towns, which had been 15·3, 16·1, and 15·6 per 1000 in the three preceding weeks, rose to 16·0 per 1000 in the week under notice. During the first nine weeks of the current quarter the mean annual death-rate in these towns averaged 16·0, against 14·2 per 1000 in the 97 large English towns. Among the several towns the death-rate last week ranged from 9·4 in Falkirk, 10·1 in Motherwell, and 10·3 in Kilmarnock, to 17·6 in Glasgow and in Clydebank, 19·0 in Leith, and 20·0 in Paisley.

The 702 deaths from all causes were 16 in excess of the number in the previous week, and included 62 which were referred to the principal epidemic diseases, against 52 and 56

in the two preceding weeks. Of these 62 deaths, 19 resulted from measles, 19 from whooping-cough, 16 from infantile diarrhœal diseases, 3 from scarlet fever, 3 from diphtheria, and 2 from enteric fever, but not one from small-pox. The mean annual death-rate from these diseases was equal to 1·4, against 1·2 per 1000 in the 97 large English towns. The deaths attributed to measles, which had been 20, 27, and 17 in the three preceding weeks, slightly rose to 19 last week, of which 11 occurred in Glasgow and 6 in Dundee. The deaths referred to whooping-cough, which had been 18, 10, and 23 in the three preceding weeks, fell to 19, and included 11 in Glasgow, 2 in Paisley, and 2 in Clydebank. The fatal cases of diarrhœa and enteritis (among infants under 2 years), which had been 6, 14, and 7 in the three preceding weeks, rose to 16 last week, of which 8 were recorded in Glasgow and 3 in Aberdeen. The 3 deaths attributed to scarlet fever, which comprised 2 in Glasgow and 1 in Clydebank, were 2 below the average in the earlier weeks of the quarter. The 3 deaths from diphtheria were registered in Aberdeen and were 3 below the average in the earlier weeks. The fatal cases of enteric fever occurred in Glasgow and Hamilton.

The deaths referred to diseases of the respiratory system, which had been 104, 107, and 96 in the three preceding weeks, slightly rose to 99 in the week under notice; 22 deaths resulted from different forms of violence, against numbers increasing from 16 to 33 in the four preceding weeks.

HEALTH OF IRISH TOWNS.

In the 27 town districts of Ireland, with an aggregate population estimated at 1,205,280 persons at the middle of this year, 747 births and 412 deaths were registered during the week ended Saturday, May 30th. The annual rate of mortality in these towns, which had been 18·6, 18·2, and 18·9 per 1000 in the three preceding weeks, declined to 17·8 per 1000 in the week under notice. During the first eight weeks of the current quarter the mean annual death-rate in these towns averaged 20·3 per 1000; in the 97 large English towns the corresponding rate did not exceed 14·3, while in the 16 Scotch towns it was equal to 16·0 per 1000. The annual death-rate in the week under review was equal to 22·2 in Dublin (against 11·8 in London and 15·5 in Glasgow), 15·0 in Belfast, 18·4 in Cork, 7·6 in Londonderry, 17·6 in Limerick, and 17·1 in Waterford, while in the 21 smaller towns the mean rate was 17·3 per 1000.

The 412 deaths from all causes were 26 below the number in the previous week, and included 48 which were referred to the principal epidemic diseases, against 43 and 46 in the two preceding weeks. Of these 48 deaths, 19 resulted from measles, 11 from whooping-cough, 10 from infantile diarrhœal diseases, 6 from scarlet fever, 1 from enteric fever, and 1 from diphtheria, but not one from small-pox. The mean annual death-rate from these diseases was equal to 2·1, against corresponding rates of 1·1 and 1·3 per 1000 in the English and Scotch towns respectively. The deaths attributed to measles, which had declined from 45 to 18 in the four preceding weeks, were 19 in the week under notice, and comprised 14 in Dublin, 3 in Belfast, and 2 in Sligo. The deaths referred to whooping-cough, which had fallen from 14 to 7 in the six preceding weeks, rose to 11, of which 7 occurred in Belfast, 3 in Cork, and 1 in Dublin. The fatal cases of diarrhœa and enteritis (among infants under 2 years), which had been 3, 9, and 10 in the three preceding weeks, were again 10, and included 4 in Dublin and 4 in Belfast. The 6 deaths attributed to scarlet fever, of which 4 were recorded in Belfast, were 2 in excess of the average in the earlier weeks of the quarter. The fatal cases of enteric fever and diphtheria were registered in Dublin.

The deaths referred to diseases of the respiratory system, which had been 74, 86, and 79 in the three preceding weeks, rose to 85 in the week under review. Of the 412 deaths from all causes, 140, or 34 per cent., occurred in public institutions and 6 resulted from various forms of violence. The causes of 17, or 4·1 per cent., of the total deaths were not certified either by a registered medical practitioner or by a coroner after inquest; in the 97 large English towns the proportion of uncertified causes of death did not exceed 0·7 per cent.

In the 27 town districts of Ireland 562 births and 385 deaths were registered during the week ended Saturday, June 6th. The annual rate of mortality in these towns, which had been 18·2, 18·9, and 17·8 per 1000 in the three preceding weeks, further fell to 16·7 per 1000 in the week under notice. During the first nine weeks of the current quarter the mean annual death-rate in these towns averaged 19·9 per 1000; in the 97 large English towns the corresponding rate did not exceed 14·2, while in the 16 Scotch towns it was equal to 16·0 per 1000. The annual death-rate last week was equal to 19·9 in Dublin (against 12·7 in London and 17·6 in Glasgow), 16·6 in Belfast, 15·0 in Cork, 14·0 in Londonderry, 17·6 in Limerick, and 19·0 in Waterford; while in the 21 smaller towns the mean death-rate did not exceed 11·3 per 1000.

The 385 deaths from all causes were 27 below the number in the previous week, and included 36 which were referred to the principal epidemic diseases, against 46 and 48 in the two preceding weeks. Of these 36 deaths, 21 resulted from measles, 6 from whooping-cough, 4 from infantile diarrhœal diseases, 3 from diphtheria, 1 from enteric fever, and 1 from scarlet fever, but not one from small-pox. The mean annual death-rate from these diseases was equal to 1·6, against corresponding rates of 1·2 and 1·4 per 1000 in the English and Scotch towns respectively. The deaths attributed to measles, which had been 21, 18, and 19 in the three preceding weeks, slightly rose to 21 last week, of which 18 occurred in Dublin. The deaths referred to whooping-cough, which had been 8, 7, and 11 in the three preceding weeks, fell to 6, and comprised 4 in Belfast and 2 in Dublin. The fatal cases of infantile diarrhœa and enteritis, which had increased from 3 to 10 in the four preceding weeks, fell to 4 last week, of which 2 were registered in Dublin. The 3 deaths attributed to diphtheria, comprising 2 in Belfast and 1 in Dublin, were slightly in excess of the average in the earlier weeks of the quarter. The fatal case of enteric fever occurred in Dublin, and that of scarlet fever in Belfast.

The deaths referred to diseases of the respiratory system, which had been 86, 79, and 85 in the three preceding weeks, fell to 63 in the week under notice. Of the 385 deaths from all causes, 122, or 32 per cent., occurred in public institutions, and 6 resulted from various forms of violence. The causes of 17, or 4·4 per cent., of the total deaths were not certified either by a registered medical practitioner or by a coroner after inquest; in the 97 large English towns the proportion of uncertified causes of death did not exceed 0·7 per cent.

THE SERVICES.

INDIAN MEDICAL SERVICE: ANNUAL DINNER.

THE annual dinner in London of the Indian Medical Service was held on June 8th at the Hotel Cecil, under the chairmanship of Surgeon-General Percy Hugh Benson. The following were present:—Guests: General Sir Edmund Barrow, G.C.B., Military Secretary, India Office; Sir James D. La Touche, K.C.S.I., member of the India Office Council; Sir Thomas Barlow, Bart., K.C.V.O., President of the Royal College of Physicians of London; Sir Rickman J. Godlee, Bart., K.C.V.O., President of the Royal College of Surgeons of England; Sir Francis H. Champneys, Bart., President of the Royal Society of Medicine; Mr. Austin Low; the Editor of THE LANCET; and the Editor of the *British Medical Journal*. Sir David Ferrier, President of the Medical Society of London, was invited but was unable to be present. Members: Surgeon-Generals: Sir R. Havelock Charles, G.C.V.O., J. Cleghorn, C.S.I., A. M. Crofts, C.I.E., J. P. Greany, and G. W. R. Hay. Colonels: C. W. Carr-Calthrop, D. French-Mullen, W. G. H. Henderson, H. Hendley, D. E. Hughes, M. D. Moriarty, R. D. Murray, A. Porter, and P. A. Weir. Lieutenant-Colonels: A. Alcock, C.I.E., W. Alpin, J. Anderson, A. E. Berry, W. H. Burke, W. H. Cadge, D. G. Crawford, R. H. Elliot, P. J. Freyer, G. H. D. Gimlette, C.I.E., H. Greany, P. de H. Haig, J. G. Hulbert, G. B. Irvine, E. R. Johnson, J. N. MacLeod, C.I.E., D. P. MacDonald, R. K. Mitter, T. R. Mulroney, A. H. Nott, S. E. Prall, K. Prasad, J. J. Pratt, B. J. Singh, W. H. Thornhill, D. Warliker, H. P. Woolbert, H. G. L. Wortabet, and F. W. Wright. Majors: S. H. Lee Abbott, C. R. Bakhle, F. L. Blenkinsop, F. D. S. Fayrer, J. K. Fleming, W. F. Harvey, E. C. Hepper, S. P. James, G. King, R. W. Knox, W. H. Leonard, W. T. McCowen, W. R. J. Scroggie, M. H. Thornley, J. N. Walker, and C. G. Webster. Captains: A. C. Anderson, C. H. Barber, D. P. Goil, A. F. Hamilton, L. Hirsch, J. L. Lunham, A. C. Munro, R. D. MacGregor, J. O'Leary, M. F. Reaney, H. Ross, T. C. Rutherford, W. D. H. Stevenson, and M. F. White. The toasts of "The King" and "The Indian Medical Service" were duly honoured, and, in accordance with custom, there were no speeches, but a number of songs were given by Madame Edith Grey-Burnand. The proceedings were thoroughly enjoyable, and the thanks of those present are due to Lieutenant-Colonel J. J. Pratt, honorary secretary of the dinner, for a most successful evening.

ROYAL NAVY MEDICAL SERVICE.

Surgeon John Courtenay Folliott Dudley Vaughan has been promoted to the rank of Staff-Surgeon in His Majesty's Fleet (dated May 19th, 1914).

ROYAL ARMY MEDICAL CORPS.

Surgeon-General W. Ford, D.S.O., has been selected for

appointment as Deputy Director of Medical Services to the Northern Command Headquarters Staff.

Colonel T. P. Woodhouse has been appointed Deputy Director of Medical Services to the Aldershot Command.

Lieutenant-Colonel S. F. Clark has joined at Chester. Lieutenant-Colonel M. P. C. Holt, D.S.O., has been appointed to hold charge of the Cambridge Military Hospital at Aldershot. Lieutenant-Colonel A. T. I. Lilly, Officiating Assistant Director of Medical Services, Bombay Brigade, has been granted leave of absence. Lieutenant-Colonel W. E. Hardy has been appointed to hold charge of the Military Hospital at Calcutta on transfer from Allahabad Cantonment. Lieutenant-Colonel C. Dalton has been appointed Commandant and Director of Studies to the Royal Army Medical Corps Camp of Instruction at Longmoor, Aldershot. Lieutenant-Colonel A. P. Blenkinsop has been selected for appointment as Assistant Director-General at the Medical Division of the War Office in succession to Lieutenant-Colonel C. Burtchael, whose tenure of appointment expires in August next. Lieutenant-Colonel J. J. Russell has been selected for advancement to the higher grade of his rank under Article 358 of the Royal Warrant for Pay and Promotion.

Major H. B. G. Walton has been appointed to the Military Hospital at Ranikhet Cantonment. Major B. B. Burke has been placed under orders for transfer from the Military Hospital at Dover and appointed to hold charge of the Duke of York's School. Major G. T. K. Maurice has been transferred from Worcester to the Military Hospital at Tidworth. Major G. M. Goldsmith has arrived home for duty from Lebong Cantonment. Major A. W. N. Bowen has been transferred from the Belfast District to the Military Hospital at the Curragh. Major F. E. Gunter has been appointed to the Southern Command. Major M. Babington has taken up duty as Bacteriological Specialist at Queen Alexandra's Military Hospital, Grosvenor-road. Major J. Power has been appointed Specialist in Midwifery and Gynæcology to the Chatham District and placed in charge of the Military Families Hospital at Chatham. Major R. H. Fuhr, D.S.O., has taken up duty as Assistant Medical Officer in charge of the Royal Arsenal at Woolwich. Major G. B. Moore has been appointed to hold charge of the Medical Division at the Cambridge Military Hospital, Aldershot. Major M. M. Rattray has taken up duty at the Royal Herbert Hospital, Woolwich. Major G. J. A. Ormsby has arrived home for duty from the Military Hospital at Meerut Cantonment. Major A. H. Safford has been transferred from the Military Hospital at Colchester and appointed to hold medical charge of the Training Camp at Felixstowe. Major J. F. Martin has taken up duty in the Aldershot Command.

Captain E. C. Phelan has arrived home for duty from the Military Hospital at Barrackpore Cantonment. Captain H. C. Sidgwick has been appointed Specialist in Advanced Operative Surgery to the Herbert Hospital at Woolwich. Captain W. F. H. Loughnan has taken up duty at the Military Hospital, Hounslow. Captain M. B. H. Ritchie has been appointed to the Military Hospital at Colchester. Captain H. M. Thompson has joined at Aldershot. Captain C. G. Sherlock has been granted six months' general leave of absence home from India. Captain W. C. Nimmo has been appointed Specialist in Midwifery and Diseases of Women and Children to the Aldershot Command. Captain T. C. C. Leslie has embarked for India. Captain T. H. Dickson has been transferred from the Military Hospital at Bareilly to Ranikhet Cantonment. Captain C. Scaife has arrived home for duty from Belgaum Cantonment. Captain A. H. Heslop has arrived home from Rawal Pindi Cantonment. The following Captains have joined the Camp of Instruction at Longmoor:—H. A. Meadon, F. E. Roberts, O. Ievers, and M. O. Wilson. Captain K. A. C. Doig has been transferred from the Military Hospital at Meerut Cantonment to Chakrata. Captain R. D. O'Connor has arrived home for duty from the Military Hospital at Multan Cantonment. Captain D. M. Corbett has been appointed to the Western Command. Captain M. O. Wilson has arrived home for duty from Aden. Captain W. J. Tobin has been transferred from the Military Hospital at Madras to Bangalore. Captain F. Casement has been appointed to the Scottish Command. Captain W. Mitchell has joined the Military Hospital at Wrexham. Captain E. B. Lathbury has been transferred from the Cork District to Kilworth. Captain E. D. Caddell has been appointed to the Eastern Command. Captain J. A. Bennett has been transferred from Cork to Youghal. Captain C. W. Bowle has been appointed to hold charge of the Military Hospital at Enniskillen. Captain G. A. D. Harvey, specialist in physical training at the Royal Army Medical College, Grosvenor-road, has been appointed to the Egyptian Army. Captain W. K. Beaman has been appointed to the Northern Command. The following Captains have been detailed to attend the next course of instruction for promotion to the rank of Major at the Royal Army Medical College, Grosvenor-road, S.W.: R. G. H. Tate, R. J. C. Thompson, F. Worthington, C. W. Bowle, A. C. Elliott, W. E. Marshall, W. E. C. Lunn, W. Mitchell, and D. de C. O'Grady. Captain A. L. Foster has been transferred from the Second (Rawal Pindi) Division to the Aden Brigade. Captain A. G. Wells has arrived home for duty from Ambala Cantonment.

Lieutenant A. G. Bigham has embarked for duty with the Northern Army in India. Lieutenant E. A. Strachan has been transferred from Lucknow Cantonment to the Military Hospital at Bareilly. Lieutenant C. M. Ingoldby has been appointed to the Second (Rawal Pindi) Division. Lieutenant R. B. Phillips has been transferred from medical charge of the barracks at Tipperary to Cork. Lieutenant W. O. W. Ball has taken up duty at Bordon. Lieutenant F. C. Lambert has been appointed to the Military Hospital at Poona Cantonment. Lieutenant J. T. McEntire, at the termination of leave of absence, has been placed under orders to join the Irish Command. Lieutenant W. S. R. Stevenson has been transferred from the Karachi Brigade to the Fourth (Quetta) Division. Lieutenant R. Davidson has been appointed to the Military Hospital at Lucknow Cantonment on transfer from Hounslow. Lieutenant W. L. Webster has been placed under orders for duty in Egypt. Lieutenant E. B. Allnutt has been transferred from the Fourth (Poona) Division to the Military Hospital at Purandhar Cantonment. Lieutenant H. N. Sealy has taken up duty at Kildare. Lieutenant H. F. Panton has embarked for India. Lieutenant J. Hare has been transferred from the Military Hospital at Enniskillen to the Belfast District.

INDIAN MEDICAL SERVICE.

Lieutenant-Colonel G. F. W. Braide, Inspector-General of Prisons in the Punjab, has been appointed to officiate as Inspector-General of Civil Hospitals in the Punjab during the absence on leave of Colonel C. J. Bamber, M.V.O. Lieutenant-Colonel R. G. Turner, civil surgeon at Lucknow, has been appointed to the staff of the King George Medical College as Professor of Midwifery. Lieutenant-Colonel V. B. Bennett has arrived home on combined leave of absence from India. Lieutenant-Colonel A. Buist has relinquished charge of the District Jail at Campbellpore. Lieutenant-Colonel J. N. MacLeod, agency surgeon, has been granted ten months' combined leave of absence. Lieutenant-Colonel W. T. Irvine has joined at Peshawar. Lieutenant-Colonel B. J. Singh has arrived home on leave of absence from India. Lieutenant-Colonel P. B. Haig has been appointed Agency Surgeon to Bhopal State.

Major T. C. MacCombie Young, Deputy Sanitary Commissioner to the Government of Assam, has been granted three months' privilege leave of absence. Major H. J. Crossle, on return to India from leave of absence, has been appointed to hold civil medical charge at Hazara. Major H. Melville has taken up duty at Lahore. Major E. J. O'Meara, civil surgeon and Principal of the Government Medical School at Agra, has been granted three months' privilege leave of absence. Major J. Woods has been appointed to Burma for plague prevention duty. Major H. Austen Smith has been appointed to Simla. Major W. M. Anderson has been appointed to hold civil medical charge at Quetta. Major S. H. Burnett has joined at Calcutta. Major H. R. Nutt, civil surgeon at Muttra, has been granted privilege leave combined with furlough on medical certificate home from India for eight months. Major W. S. Willmore, civil surgeon at Sitapur, has been transferred to Agra and appointed to officiate as Civil Surgeon and Principal of the Government Medical College. Major M. H. Thornley has arrived home on leave of absence from India.

Captain R. S. Townsend, plague medical officer at Aligarh, has been appointed to officiate as Civil Surgeon at Agra, vice Major H. R. Nutt. Captain F. E. Wilson has been appointed to hold civil medical charge at Sibi. Captain H. C. Keates has been appointed Superintendent of the Multan District Prison, vice Major M. Corry. Captain F. F. S. Smith has arrived home on leave of absence from India. Captain R. E. Flowerdew has been appointed Civil Surgeon at Port Blair and Superintendent of the Cellular and Female Jails. Captain E. A. Walker has been appointed to officiate as Civil Surgeon at Meiktila. Captain J. C. G. Kunhardt has been appointed to the Bacteriological Department. Captain E. C. C. Maunsell, medical officer to the 94th Infantry, has been appointed to officiate as Civil Surgeon at Cochin. Captain J. O'Leary has been appointed to hold substantive medical charge of the 8th Cavalry.

SPECIAL RESERVE OF OFFICERS.

Royal Army Medical Corps.

The undermentioned to be Lieutenants (on probation):—John Alexander O'Driscoll, late Cadet Lance-Corporal, Royal College of Surgeons in Ireland Contingent, Officers Training Corps (dated April 27th, 1914). Ivan Millar Pirrie, late Cadet Colour-Sergeant, Durham University Contingent, Officers Training Corps (dated May 4th, 1914). Cadet Edgar Stanley Rowbotham, from the London University Contingent, Officers Training Corps (dated May 6th, 1914). From the Aberdeen University Contingent, Officers Training Corps

(dated May 9th, 1914): Cadet Lance-Corporal Forster Heddle Brown Norrie, Cadet Robert Scott Cumming, Cadet Ian George Macdonald Firth, and Cadet Robert Boulton Myles. Cadet Sergeant John Forbes William Sandison (dated May 11th, 1914). Cadet Robert Daniel Lawrence (dated May 12th, 1914).

TERRITORIAL FORCE.

Royal Army Medical Corps.

3rd East Anglian Field Ambulance, Royal Army Medical Corps: Lieutenant Walter R. S. Roberts to be Captain (dated May 1st, 1914).

3rd North Midland Field Ambulance, Royal Army Medical Corps: Guy Fleetwood Haycraft to be Lieutenant (to be supernumerary) (dated May 1st, 1914).

1st Northumbrian Field Ambulance, Royal Army Medical Corps: Supernumerary Lieutenant Joseph W. Craven is absorbed into the establishment (dated April 1st, 1914).

Ronald Greig Badenoch (late Cadet, Durham University Contingent, Senior Division, Officers Training Corps) to be Lieutenant (dated April 28th, 1914).

1st London (City of London) General Hospital, Royal Army Medical Corps. The under-mentioned officers resign their commissions:—Lieutenant-Colonel Samuel West and Major Joseph A. Ormerod (dated June 6th, 1914).

4th Northern General Hospital, Royal Army Medical Corps: John Jekyll Rainforth to be Captain (dated May 1st, 1914). Major George W. Shipman resigns his commission (dated June 6th, 1914). Captain Edward C. Clements to be Major (dated June 6th, 1914).

East Lancashire Clearing Hospital, Royal Army Medical Corps: Thomas Blakeway Wolstenholme to be Lieutenant (dated April 8th, 1914).

Attached to Units other than Medical Units.—Jesse Robert Garrood to be Lieutenant (dated Feb. 27th, 1914).

CENTENARIANS.—Mrs. Mary Shelton, of Rowcroft, Stroud, Gloucestershire, celebrated the 102nd anniversary of her birthday on May 29th, and she walked to the local post-office to receive her old age pension.—Mrs. Rebecca Clark, the centenarian of Wood Green, North London, and said to be the oldest woman in England, celebrated the 110th anniversary of her birthday on June 9th.—Mrs. Ruth Turner died recently at Bolton, aged 101 years.

A new series of lectures on Modern Theories of Correcting Vision and New Aids to Vision (Punktal lenses, &c.), by Carl Zeiss, Jena, will be given with numerous experiments and demonstrations by Dr. O. Henker, at the Eye Clinic of the Berlin University during the week commencing June 17th. Further information can be obtained by ophthalmologists and surgeons from Herr Sanitatsrat Dr. Wertheim, Berlin W. 15, Meineckestrasse 5, or from Messrs. Carl Zeiss, 13–14, Great Castle-street, Oxford Circus, London, W. Lectures on the same subject will subsequently be given by Dr. Henker at Prague (Bohemia), Lund (Sweden), and Dresden, Munich and Düsseldorf (Germany).

NATIONAL ASSOCIATION FOR THE PREVENTION OF CONSUMPTION AND OTHER FORMS OF TUBERCULOSIS.—The preliminary programme of the sixth annual conference of this association, which will be held at Leeds on July 7th and 8th and of which the King is patron, has just been issued. It announces that a joint committee composed of various authorities interested in the prevention of consumption has selected the following subjects for discussion—namely, the house in relation to tuberculosis; tuberculosis, especially surgical, in children; and domiciliary treatment. The two first subjects will be discussed at the morning and afternoon sessions on July 7th respectively, and the third subject at the morning session of July 8th, a general discussion on all the subjects that have been under consideration taking place at the afternoon session of that day. It is hoped that the Duke of Devonshire, the Chancellor of the University of Leeds, will open the conference, and the opening addresses will be given by Sir William Younger, one of the members of the Royal Commission (Scottish) on Housing; Mr. R. Lawford Knaggs, Professor of Surgery in the University of Leeds; and Sir William Osler, F.R.S., Regius Professor of Medicine in the University of Oxford. There will be the usual excursions and social functions, which, however, have not yet been definitely arranged. Full particulars may be obtained from the Secretary of the Conference, 20, Hanover-square, London, W.

MEDICAL PRACTICE UNDER THE INSURANCE ACT.

(BY OUR SPECIAL COMMISSIONER.)

(*Continued from p. 1641.*)

XLVIII.—YARMOUTH: THE ACT AND THE BATTLE OF THE CLUBS.

Great Yarmouth, the popular Norfolk seaport and health resort, was formerly the field of a great engagement between the medical profession and medical aid associations, and it is now the seat of a struggle that threatens to be indefinitely prolonged. Perhaps it is because the profession but a short while ago was firmly united here that the prevalent discord is more keenly felt. Rarely have I come across such bitterness, or contemplated an outlook so sombre for those who had hoped that, given a little time for adjustment, the National Insurance Act would bring peace and goodwill. Not so long ago—that is, before the Insurance Act came into force—everyone who visited Yarmouth was agreeably impressed by the friendliness that prevailed between the medical men of the town. There was cordiality on all sides. To understand the meaning of this we must go back some 20 years, when the medical men of Yarmouth took a very active part in the battle of the clubs. These clubs or Friendly Societies formed an institute consisting of a federation of societies, and by importing whole-time medical officers they defied the attempts of the profession to improve the conditions of club or contract practice. At first the doctors were defeated, losing a great part of their club patients; but in the course of time the subscribing members of the institute became dissatisfied with the treatment supplied to them, and one by one they returned to their former medical advisers or to some independent practitioner, accepting the fair terms demanded. These were based on the principle of treating the men for only 4s. per year, but for the children 4s. each was also charged, and for the women 6s. The idea underlying the arrangement was that when the breadwinner is at work it is easier to pay for attendance on the other members of the family. In the struggle against the clubs the medical officers claimed the right to refuse to attend on members who were well-to-do; and this establishing of a wage limit was the principal reason that made the clubs federate and found an institute. On leaving the federation they accepted the wage limit.

At Yarmouth the profession was at this time so united that the boycott of the institute medical officers was very effective, and only one medical officer was serving its needs during the time the Insurance Bill was first discussed. It is unnecessary to say that but for the new legislation the profession at Yarmouth would have been completely victorious. But the Insurance Act has given the institute a new lease of life, and this alone has sufficed to arouse a strong feeling of resentment. It must be borne in mind that the battle of the clubs as conducted at Yarmouth had been no trivial contest, but a very serious matter. One of the Yarmouth practitioners told me the institute had taken from him so many club patients that he lost during the first year nearly £300. But some of the clubs came back to him, and many of the members returned to consult him as private patients, so that he ultimately recovered his loss. Other practitioners have similar stories to tell, and it follows

therefrom that, having fought the battle of the clubs with a large measure of success, the medical profession in Yarmouth anticipated that the Insurance Act also could be resisted if it imposed upon them terms which they felt as a body to be inequitable.

How Yarmouth Yielded.

The fact that the resistance collapsed, in spite of such a favourable precedent, accounts for the present bitterness of feeling. The local division of the Association includes with Yarmouth Lowestoft and the surrounding country. To deal, however, with purely local matters the Yarmouth practitioners formed a medical guild. With the exception of the full-time medical men employed by the Friendly Societies' Medical Institute, all the Yarmouth practitioners belonged to the guild. Then there was also a social medical club to which a large number of doctors belonged. Thus there was much organisation that should have helped to keep the profession together and ensure their unity of action. Every practitioner in the town signed the pledge to resist the Act, even the whole-time men in the employ of the institute. This was in the summer of 1912, and they reiterated their undertaking in December, 1912. All remained of one mind until the Representative Meeting of the British Medical Association that was held towards the end of December. The delegates from the district to these meetings held in London by the Association were always instructed to vote against attempting to work the Act. It seemed as if everything was settled, and Yarmouth continued to hold out, though many other towns had yielded. At last some local practitioners began to ask that yet another local meeting should be convoked, and finally signed a petition to that effect. This could not be refused, and the meeting was called together. The tone by this time had changed. Much was made of the fact that Bradford had yielded, and a great deal was said about the threatened importation of doctors. This meeting took place early in January, and on the evening of the same day the Yarmouth doctors met the Insurance Committee, which was uncompromising in its stated intentions. An operating surgeon was to be imported, who would receive £1000 a year. Nine general practitioners were alleged to be coming, and these would be paid annually £500 each. The chairman of the Local Insurance Committee stated that Mr. Smith Whitaker, deputy chairman of the Insurance Commission and formerly medical secretary of the British Medical Association, had declared he could from his personal knowledge of the town indicate exactly where to place these medical men, so that a State Medical Service could be run to the best advantage, a statement that certainly could not have been made with Mr. Smith Whitaker's authority or knowledge. Some of the local practitioners were impressed by these threats, for there were five or six of them who might have been very seriously affected by the loss of their clubs if they did not go on the panel. But as many as 16 local practitioners joined the panel before they were relieved of their pledge. Nine refused service, and though now they are no longer bound by any pledge to resist they nevertheless are still holding out.

Faint Support for the Non-panel Doctors.

These nine have forwarded forcible appeals to the British Medical Association to stand by them, and have called upon headquarters to take some definite step to prove their sympathy, often asserted, with those who are resisting the Act. In January, 1913, when the question of contracting out was acute, a request was made that a speaker should be sent to Yarmouth to support dissentient views. The answer of the Association was to the effect that perhaps such a meeting was scarcely advisable as it might not be agreeable to the panel doctors, for it must be remembered that by this time the pledge had just been rescinded. The idea persisted that "the whole weight of the Association" had been promised to the men who held to their bond. Even after absolution from the pledge or pledges, therefore, this was considered an unsatisfactory reply, and the meeting was abandoned. The Association was now accused of showing sympathy rather with those who had broken than with those who had kept their pledge. The non-panel doctors of Yarmouth felt that they were not properly supported, and the panel doctors formed a Local Medical Committee without informing them. This was irregular, for the whole of the local profession is entitled to participate, and consequently another election had to take place. While the non-panel doctors were endeavouring to obtain a wide application of the contracting-out system, the panel doctors wanted the Insurance Committee to allot to them those insured persons who had not yet selected a medical adviser. Further, the two parties came into conflict as to what use should be made of the general hospital. As it is for the most part the leading medical men in the town who have not joined the panel they were able to exercise control over the hospital in this respect, even though a threat was made to persuade the Friendly Societies not to subscribe any more to the hospital fund. This challenge, however, was ignored, and the hospital remains independent of the panel and of the Insurance Act. But the members of the hospital staff complain that the panel doctors send their worst cases to them. Thus some of those medical men who refused to go on the panel have, as the honorary medical staff of the hospital, to do—and this, of course, for nothing—some of the most difficult part of the panel doctor's work.

A Land of Small Fees.

In the old club days there were many persons of small means who, though they belonged to clubs or Friendly Societies, nevertheless consulted private practitioners, especially if they were seriously ill. To-day, however, these persons can hardly afford to pay their share of the insurance money and continue giving fees to independent medical attendants. They are thus likely to avail themselves of their panel doctor more frequently than they did of their club doctor. At Yarmouth there is an unusually large number of people with small wages who constitute the back-bone of local medical practice. They only gave small fees, but they paid, at the accepted rate, for services rendered. Such patients were associated with the various phases of the fishing industry, as coopers, carters, and so on, or were employed at one of the several factories. Further, there are large drapery establishments. During the season a large proportion of even quite small householders engage in the precarious calling of letting lodgings, while a great amount of laundry work is done by the Yarmouth women. Then, after the holiday season is over, from September to December, some 5000 to 6000 Scotch women come to dress the fish. Lastly,

there are the fishermen, some of whom sleep on shore in lodgings, though many remain on board their boats. All this represents a large population able to pay a few small fees. All these people are living on slender earnings, but they are not so poor as to be suitable recipients of charity. On the other hand, there is not an extensive prosperous middle-class in Yarmouth to leaven this mass of comparatively poor. There are few schools now which attract residents to Yarmouth in the way that schools in many sea-side resorts appear to do. Society here consists of the tradesmen and a few professional families. This, therefore, is a town where the Insurance Act should improve the conditions of medical practice, at least from the financial point of view. The non-panel doctors do not deny this fact, but claim that it is all the more to their credit that they do not go on to the panel.

During the summer season the population is doubled, but the holiday folks are, generally speaking, a poor class of people. Many come from the East-end of London and only for three or five days. It will be understood how ardent, in such circumstances, the battle of the clubs must have been when so large a section of the population was living on, so to speak, the frontier line of contract practice. Still, as stated, this battle was fought, and the profession was not so much hurt by the clubs, particularly of late, when so many club patients had returned to the doctors they at first left to join the institute created by the Friendly Societies. Thus, after a battle of 20 years' duration, the profession were reaping the fruits of their victory when the Insurance Act threatened to destroy what they had gained. The indignation felt may be easily understood, though, as a matter of fact, the establishment of compulsory insurance has not impoverished but enriched a good many practitioners, while it has not so seriously damaged those who would have nothing to do with it. The truth is that the population of Yarmouth, as explained above, could not afford to spend much for medical attendance. The money now collected by the administration carrying out the Insurance Act has brought to the medical profession a larger sum than was ever before devoted to medical purposes. Thus it happens that while the incomes of the panel doctors have been considerably increased, those of the non-panel doctors have not proportionately diminished.

(To be continued.)

THE West African Medical Staff dinner will be held at the Grand Hotel, Charing Cross, London, W., on Monday, June 15th.

ASSOCIATION OF REGISTERED MEDICAL WOMEN.—A conference on tuberculosis was held in the rooms of the Medical Society, 11, Chandos-street, Cavendish-square, W., on June 9th, Dr. Jane Walker being in the chair. A discussion took place on the Present Position of Tuberculin Treatment. This was opened by Dr. Hilda Clark, late tuberculosis officer for Portsmouth, and among those who took part were Dr. Noel Bardswell, Dr. F. W. Burton-Fanning, Mr. H. J. Gauvain, Dr. Annie McCall, and Dr. Harrington Sainsbury. After tea there was a discussion on the Present Position of Sanatorium Treatment (*a*) for children, and (*b*) for adults, opened by Dr. Esther Carling and Dr. Esslemont respectively. Dr. Muriel Bywaters, Mr. George Finch, Dr. Alfred Salter, and Dr. Henry O. West took part in this discussion.

Home and Foreign Notes.

(FROM OUR OWN CORRESPONDENTS.)

BRISTOL AND WESTERN COUNTIES.

Decrease of Vaccination in Bristol.

THE decrease of vaccination still continues in the Bristol union. During April last the births numbered 683. 133 children were vaccinated and 179 conscientious objection certificates were received during the month.

Sanitary Inspectors' Association.

A meeting of the Devon and Cornwall branch of this association was held at Plympton on June 6th. Mr. J. Siddalls read a paper on Sanitary Legislation, and in referring to the Tuberculosis Order of 1913, said that if it was to be of any real utility it must be enforced with greater energy than had been the case. Other papers were read, and a discussion took place on the Pure Milk Bill; several members considered it would be a difficult matter to deal with the rural authorities. Other speakers hoped that the American plan of grading milk into "A," "B," and "C" classes would not be included in the Bill.

The Sanitary Condition of Dartmouth.

Dr. F. St. George Mivart, of the Local Government Board, recently reported in reference to some of the houses in the town, "It is difficult to understand how any sanitary authority can tolerate the existence of such dens as some of those visited." An inquest was held last week upon the body of an old man who died in a house which the medical witness described as "filthy," and the jury in their verdict added a rider urging the council to take early steps for better inspection and supervision of these houses. Dartmouth is visited by so many tourists in the summer months that it is to be hoped the local authorities will immediately remedy the present state of affairs.

Midwives and Medical Officers of Health.

Mr. S. Noy Scott, medical officer of health for the Plympton rural district, in his annual report for 1913 alludes to the inspection of midwives in Devon by an inspectress. Mr. Scott says that this lessens the control medical officers of health have over midwives. He is of opinion that this control should not have been taken away from the district medical officer of health, and the inclusion of ophthalmia neonatorum with the notifiable diseases increases Mr. Scott's opinion of this fact, since medical officers of health are responsible for the investigation of puerperal fever and ophthalmia neonatorum, and he contends that it is common sense for the officer whose duty it is to "control" these diseases should also be the officer to "control" one of the chief factors in their origin.

The Medical Officer of Health of Wiltshire.

At the last meeting of the Wilts county council it was decided to increase the salary of the medical officer of health from £600 to £700 per annum, and that of the deputy medical officer of health from £400 to £450.

Death of Mr. B. J. Collyer.

Mr. Bertram Joseph Collyer, L.R.C.P. Lond., M.R.C.S. Eng., died recently at his residence at Paignton, Devonshire, in his forty-fourth year, from pulmonary tuberculosis. He received his medical education at St. Bartholomew's Hospital

and qualified in 1898. After holding resident appointments at the General Hospital, Birmingham, Mr. Collyer commenced practice at Paignton, where he soon became very popular. He was medical officer to the post office. Mr. Collyer was a keen yachtsman, and was a member of the Torbay Sailing Club, and took an active part in the annual Paignton Regatta. He will be much missed in Paignton and the district, and sympathy is widely felt there for his widow and two children.

June 9th.

SCOTLAND.

Child Study Society Conference in Edinburgh.

THIS annual Conference, again held in Edinburgh after an interval of 14 years, met on June 4th. Dr. John Macpherson is the local president, and Sir James Crichton-Browne, the President, delivered the opening address. Dr. Macpherson then submitted a paper entitled "A Plea for the Wider Recognition of the Instincts in Education." In the evening a civic reception was given in the City Chambers, and was largely attended. On the following day a paper on a Survey of the Recent Investigations and Criticisms on the Binet-Simon Tests was read by Miss Johnston. The paper dealt with these tests for the measurement of intelligence, and reviewed the present position with regard to the scale. In the afternoon the delegates were entertained to a garden party in the Scottish Zoological Park. On Saturday Mr. Cyril Burt, psychologist to the London County Council, delivered the last of the papers of the present meeting, entitled "Mental Tests." The Conference met with great success; the delegates numbered about 50, and the meetings were largely patronised on all available occasions by many interested.

Edinburgh Dinner of the Indian Medical Service.

This dinner was recently held in the Caledonian United Service Club under the chairmanship of Sir Alexander Christison, Bart. Among others present were Sir William Hooper, K.C.S.I., Sir Joseph Fayrer, Surgeon-General Turnbull, K.H.S., Surgeon-General Hay, Surgeon-General Sinclair, C.S.I., Colonel Arnott, Colonel Smith, and Colonel O'Halloran, R.A.M.C.

Association of School Medical Officers for Scotland.

At the annual general meeting of this association the following were elected office-bearers: President; Dr. Arbuckle Brown, Govan Parish. Vice-Presidents: Dr. Hally Meikle, Edinburgh; Dr. Kidd, Dundee. Secretary and Treasurer: Dr. John Hunter, Linlithgow. Council: Dr. Clarke, Edinburgh; Dr. Cameron, Glasgow; Dr. Jardine, Midlothian and Peebles; Dr. Mackenzie, Dunfermline; Dr. Roberts, Glasgow; and Dr. Sinnette, Greenock.

Maternity Benefit in Glasgow.

Recently the Glasgow Obstetrical and Gynæcological Society appointed a committee to inquire into the effect of the maternity benefit of the National Insurance Act in Glasgow. The committee have prepared a report dealing with the subject, and the general conclusion reached is that the maternity benefit under the Act has not promoted in Glasgow the comfort and security of mothers and infants to the extent that might have been hoped for. Information was obtained principally by means of a schedule of questions issued to 450 medical men engaged in general practice in the city, and also by inquiries made at the various institutions in the city where midwifery cases are treated. The outdoor cases of the Maternity Hospital in the first year of the Insurance Act are less by 967 than in the previous year, and there is a falling off in the number of cases at the Poor-law hospitals, so that there must have been a transference of work to other hands. The transference has apparently not been to the private practice of medical men, and it must have been mainly to midwives practising independently. In Scotland there is no State regulation of midwifery nurses, and many who practise as midwives are wholly untrained or without adequate training. Even if it be accepted that the trained nurse is now more frequently employed, still the untrained midwife continues in favour. Now that there is money available from the "maternity benefit," it is probable that housekeeping services, which before were rendered freely for friends or neighbours, have now to be paid for, and that the "handy woman" who will care for the house as well as the patient is preferred on that account to the midwife who carries on a practice, or to the well-trained nurse whose whole time could not be engaged by the poor, even if she were willing to undertake the housekeeping. The weight of opinion, as evidenced by the answers to the questions in the schedule issued to medical men, is against the view that there has been an increase of unskilled service, but the fact remains that the "handy woman" has not been eliminated by the operations of the Act, nor is she likely to be till there is a change in the administration of the benefit. Apart from these considerations the reduction in number of patients in the outdoor practice of the maternity hospital is likely seriously to hamper that portion of the work of the hospital which deals with the training of medical students and nurses.

Resignation of Professor James Musgrove, University of St. Andrews.

Professor James Musgrove has intimated his resignation of the chair of anatomy at the University of St. Andrews as from the end of the academical year. In accepting the resignation the University Court of St. Andrews resolved to record in the minutes its sense of the distinguished services rendered by Professor Musgrove to the study of anatomy and to the development of the medical school of the University.

Sick Children's Hospital in Dundee.

Mr. Frederick B. Sharp, of Hill of Tarvit, has offered under certain conditions to contribute the sum of £10,000 towards the cost of erecting and endowing a hospital for sick children in Dundee. The conditions are that the institution be managed by the directors of the Dundee Royal Infirmary, and that the necessary funds for building and endowing the said hospital be forthcoming within two years, otherwise the offer is to be withdrawn. At a recent meeting the infirmary board resolved to accept Mr. Sharp's generous offer under the attached conditions.

June 9th.

IRELAND.

The Medical Profession in Ireland and the National Insurance Act.

FOR the past ten months the Irish Medical Committee, as representative of the medical profession of Ireland, has been engaged in attempting to arrange with the Insurance Commissioners a satisfactory system for the certification of insured persons. At one time success seemed to be in sight, but other influences proved too strong.

and at present the Irish Medical Committee finds the position the same as it was last August. The Commissioners have as yet promulgated no scheme, but it is commonly believed that they intend shortly to appoint a number of whole-time and part-time medical certifiers to do all certification of the insured, to the exclusion of the medical attendants upon the insured. Recognising the gravity of the position, from the point of view of the insured public as well as from that of the profession, the Irish Medical Committee decided to put the history of the entire negotiations before the profession and the public. In consequence of this decision a mass meeting of the medical profession, at which representatives of the press were present, was held in the Mansion House, Dublin, on Tuesday, June 2nd. The chair was occupied by Dr. R. D. Purefoy, President of the Royal College of Surgeons in Ireland, and there was a very large attendance of members of the profession from all parts of the country. Mr. M. R. J. Hayes, medical secretary of the Irish Medical Committee, read a statement detailing the efforts made by that body during the past ten months to effect a settlement of the certification question. This was published substantially in the daily papers, and told a long story of baffled attempts to come to an understanding satisfactory to all parties and beneficial to the insured population. The following resolutions were then put and carried unanimously:—

That, in the opinion of this mass meeting of the medical profession, the medical attendant of the insured is in the best position to form a just opinion of his fitness or unfitness to work.

That any system of obtaining evidence of fitness or unfitness to work which ignores the opinion of the medical attendant will result in injustice to the sick insured, and will prevent their obtaining the benefits to which they are legally entitled.

That it is essential for the successful working of the sanatorium benefit of the National Insurance Act that the services of the general practitioner should be employed, both for the reporting of cases of tuberculosis and for carrying out domiciliary treatment.

Among those who spoke to the various resolutions were the Right Hon. Michael F. Cox, P.C., Sir Arthur Chance (past President of the Royal College of Surgeons), Mr. J. B. Story (President of the Irish Medical Association), Dr. J. S. Darling (Lurgan), Mr. J. S. McArdle, Dr. J. Power (Ardfinnan), Dr. J. C. McWalter (Governor of the Apothecaries' Hall), Mr. R. J. Johnstone (Belfast), and Dr. J. Cotter (Cork). Numerous instances were adduced by the speakers from their own experience of the failure of the sick insured to secure their benefit owing to the certificate of the patient's medical attendant being ignored. Many instances were also adduced of interference with treatment by the "medical advisers," whose only duty was to examine the patient and report to his society.

Annual Meeting of the Irish Medical Association: The Annual Dinner.

The annual meeting of the Irish Medical Association was held at the Royal College of Surgeons on June 3rd under the chairmanship of Mr. J. B. Story, the outgoing President. The annual report was received and adopted, and the report of the scrutineers of the ballot for officers and council was next submitted, showing that the following officers were elected:—President: Dr. F. W. Kidd (Dublin). Vice-Presidents: Ulster, Dr. Leonard Kidd (Enniskillen); Munster, Mr. James Keating (co. Cork); Leinster, Mr. J. B. Story (Dublin); Connaught, Dr. E. C. MacDowell (Sligo). Honorary secretary: Dr. T. Donnelly. Honorary treasurer: Dr. H. U. Byrne. The new President, Dr. F. W. Kidd, then gave a brief address dealing with the present position of the Association, and referred in particular to the decision of the British Medical Association to open a branch office in Dublin and to appoint a medical secretary for Ireland. He feared that jealousy beween the two Associations would be aroused, but emphasised the advantages to the medical profession of Ireland of possessing an association of its own, and urged members to use their influence in recruiting. A discussion of the motions on the agenda followed, when Dr. Leonard Kidd proposed the appointment of a committee of seven to report to the council on a scheme for revising the articles of association "with a view to altering the method of electing the executive, improving the administration of the affairs, and extending the sphere of usefulness of the Association." It is generally admitted that the executive of the Association is cumbrous, consisting, as it does, of a president, four vice-presidents, an honorary secretary, an honorary treasurer, 32 members representing councils, 32 general councillors, and 5 *ex-officio* members—76 persons in all. Dr. Leonard Kidd's resolution led to a keen debate, as the question of affiliation to or amalgamation with the British Medical Association came under consideration. Most of the speakers felt that the present was an inopportune time for putting forward proposals for closer coöperation with any other association. Eventually the resolution was passed, and the nomination of the committee was left to the council.—The annual dinner was held on the same evening, Dr. F. W. Kidd presiding, Mr. Justice Dodd, the Solicitor-General, Mr. P. J. MacNamara, and Sir Charles Cameron being among the guests.

Royal College of Surgeons in Ireland.

The annual election for the President, Vice-President, Secretary, and Council has resulted as follows:—President: F. Conway Dwyer. Vice-President: William Taylor. Secretary: Sir Charles A. Cameron. Council: William Stoker, Sir Charles A. Cameron, Sir Lambert H. Ormsby, Richard D. Purefoy, Henry Gregg Sherlock, Sir Charles B. Ball, John B. Story, Sir Thomas Myles, Sir John Lentaigne, Sir Arthur Chance, F. T. Porter Newell, Shepherd M'C. Boyd, Sir Robert H. Woods, Richard Lane Joynt, R. Bolton McCausland, Thomas E. Gordon, R. Charles B. Maunsell, Trevor N. Smith, and William Ireland Wheeler. The new President, Mr. F. Conway Dwyer, is a graduate in arts and medicine of Trinity College. He is a Fellow of the College since 1898. He has been in turn surgeon to Jervis-street Hospital and to the Meath Hospital, and is at present surgeon to the Richmond Hospital. He is also professor of surgery in the School of the Royal College of Surgeons.

The Tuberculosis Scheme in Belfast.

After a long delay the committee of management of hospitals and dispensaries of the city corporation of Belfast have appointed, by coöption, three members out of the Local Insurance Committee, making this new corporation committee to consist altogether of 18 members. It was simply a question of money, as the Local Insurance Committee declined to grant—as they had the power—a sum of £10,000 towards the treatment of insured persons under the corporation's scheme for the treatment of tuberculosis, unless they had representation on the committee which is to run this new Belfast municipal scheme.

Typhus Fever in Belfast.

An outbreak of typhus fever has arisen. Two

cases occurred last October, and in December the driver of the disinfecting van was attacked, and since that there were in all 11 cases up to May 5th. It was hoped the epidemic was over, but on May 9th, suddenly, a large number of cases occurred, most of them coming from two streets. In all, throughout the year 38 cases of typhus (quite an unusual number) were reported, although some of these were not undoubted cases.

June 9th.

PARIS.

The Dust on the Metropolitain Railway.

THE Conseil d'Hygiène of the Department of the Seine has for two years been pursuing an exhaustive inquiry on this subject. Of the two underground railroads in Paris the Nord-Sud furnishes only from 6 to 16 mgm. of dust, while the Metropolitain shows 134 mgm. The explanation of this difference lies in the fact that the rails of the Metropolitain are of ordinary steel and the brake shoes are of cast metal, whereas in the Nord-Sud the rails are of hardened steel and the brakes are made of a mixture of fibre and tar. Consequently in the first case the friction of stopping at a station adds materially to the supply of floating metallic particles, whilst in the second case the dust consists of organic matter. The proportion of this dust varies with the time of day. At 5 A.M. the atmosphere is limpid, the dust having settled during the night, but from the time the trains begin to run the amount increases progressively until they stop running at 1 A.M. The Conseil d'Hygiène, on the report of M. Kling, director of the municipal laboratory, has submitted to the Prefect of Police suggestions for increasing as much as possible the number of airholes on the underground and for substituting rails of hardened steel on the Metropolitain, at any rate near the stations, with the substitution of non-metallic brakes, such as are used on the Nord-Sud. He further recommends that in the stations the flooring of loose stones should be replaced by a paving easy to wash. The council has also dealt with the removal of the dust left by passengers in the carriages, which is becoming progressively dangerous notwithstanding the prohibition of spitting. The council forbids the dry cleaning at present in use, which is harmful for everyone, employees included. It proposes instead impermeable and washable floors for carriages, such as those of the Nord-Sud, and in the others cleansing at night in the depôts by means of damp sawdust.

Cheap Dwellings.

About 100 societies exist in Paris and its neighbourhood for the provision of hygienic dwellings for the poor, some of which—such as the Société Philanthropique, the group of workmen's houses, and the Weil and Rothschild foundations—possess considerable capital. The last-named, in particular, has 16,000,000 francs capital. These societies are for the most part prosperous, for notwithstanding the modest rentals the capital invested earns about 3 per cent., a rate of interest equal to that of the Funds. M. Ambroise Rendu in his report to the committee of patronage gives some very interesting statistics: the number of certificates of sanitation sought in 1913 in the Department of the Seine for such dwellings reached 1176, as against 1000 in 1912, 619 in 1911, and 495 in 1910. These certificates give to builders of cheap dwellings exemption from taxation for a certain number of years. The proportion of rejected applications was 25 per cent., the refusal dealing principally with collective houses, and being based on the lack of yard accommodation, the insufficiency of water-closets, and the inadequate space of the dwellings. These societies have already constructed 1281 individual or tenement houses for 12,000 inhabitants, of whom 7000 are children. The administration of the Assistance Publique itself, which has considerable capital at its disposition, has used part of it, at the instigation of the Conseil Municipal, in buildings of this kind. A departmental committee on cheap dwellings was created some years ago by the Government, and was charged with examining the plans of such projected buildings and granting or withholding its consent according to their compliance or otherwise with certain prescribed hygienic data. Failure to obtain this consent deprives these houses of the qualification of "cheap dwellings" and of the privileges accorded to the builders by law, especially of relief for 12 years from taxation and of security for interest. A very singular adventure has recently befallen the Administration of the Assistance Publique, which has applied 20,000,000 francs to the construction of cheap dwellings. Its architects have furnished for that purpose magnificent plans which at various exhibitions have had a gold medal awarded to them by competent juries. On June 27th 724 dwellings are to be begun and the city of Paris has agreed to a subvention of 100,000 francs for the projected structures. 7,698,000 francs have been already used in constructions, and new works to the extent of 9,000,000 francs are to be undertaken, for which the Assistance Publique, according to law, has submitted its plans for the approval of the Departmental Council of Cheap Dwellings. To the general surprise, this committee, after an examination of the plans, has refused its authorisation for their construction on the ground that they do not conform to the prescribed hygienic conditions. 59 per cent. of the buildings already constructed by the Assistance Publique have also been condemned for nonconformity with the regulations of 1910. A conflict has thus arisen between the departmental committee, which as a legally constituted body is independent and holds that its duty is to enforce the regulations, and the administration of the Assistance Publique, which contends that its plans have received the approval of all competent judges and that the regulations are inapplicable in certain particulars; for example, the obligation to leave 10 metres of unoccupied ground in front of each window, as laid down in the regulations, would condemn as not hygienic the greater part of the most beautiful buildings on the Champs Elysées, in which many of the inner courts have less than 9 metres in one of their dimensions.

Congress of Internes of the Hospitals.

The internes and former internes of the civil hospitals of towns possessing a faculty of medicine, in which these posts are awarded by competition, held a congress this week at Lyons, delegates being present from Bordeaux, Montpellier, Lille, Nancy, and other towns. Matters of professional interest relating to the welfare of the internes were dealt with in communications by Dr. Couchet, Dr. Winstel, Dr. Lesieur, and some present internes. The principal conclusion of the congress was the establishment of a permanent bureau. The next congress is to be held at Lille in 1916.

Statistics of Medical Students.

The Faculties of Medicine of the French Universities show for the current year 10,045 students, or

301 more than last year. The number of students in pharmacy remains almost stationary.

A Monument to Marey.

A monument erected by subscriptions from his friends and pupils has been unveiled to the memory of the great physiologist Marey in the park of the Institut International Marey at Boulogne-sur-Seine. The sculptor, Auban, has represented Marey seated, attentively examining a group of foot-runners, and above them a group of riders, in allusion to his researches on the analysis of movement. The President of the Republic himself delivered an address at the ceremony in which he traced the career of this brilliant physiologist.

June 8th.

Correspondence.

"Audi alteram partem."

THE EARLY TREATMENT OF MENTAL DISEASE.

To the Editor of THE LANCET.

SIR,—The annotation in your issue of June 6th on the paper by Dr. Helen Boyle and the discussion thereon, again calls attention to the urgency of legislation regarding the early treatment of mental cases, and very wisely also, to the very important suggestion that neurologists and psychologists should work more together in these cases; and there can be no doubt that either of these sections of medicine at present, if acting alone in these cases, makes sometimes very deplorable mistakes—and many instances of such mistakes could be given. The early treatment of mental cases has unfortunately to be dealt with from the side of finance, since care with adequate supervision, outside the walls of an institution, must be of necessity an expensive matter. That in proper private care, with right social surroundings, and, above all, with adequate supervision, many early cases get well, no one with experience in this direction can for one moment doubt.

With regard to sending these patients to institutions for the insane, although under the voluntary boarder clauses this can be done and so certification be avoided, there is a great factor in the public mind against this plan being adopted—viz., the want in many such institutions of proper classification. I have for years maintained that these institutions should have several departments, and that the early quiet cases should have no chance of coming in contact with the acutely maniacal cases.

In the institution I managed for some years I had four departments for my cases, and a fifth one consisted of my own family circle. I have had early cases living with my family who got well without ever having come in contact with the other cases. Patients were often transferred from one department to another in the course of the day according to their mental condition, and I found this plan most beneficial.

On the other hand, in many institutions there are only two sides. On one side those who can enjoy a quiet social life are placed; and on the other side those who cannot enjoy such a social life are herded together. Individuality in treatment is thus to a great extent lost, and with its loss a much lessened chance of recovery is given. May not this absence of proper classification, and the loss of individual treatment have something to do with the grave fact that the recovery rate of insanity in institutions is not improving and has not improved for many years, and that in spite of the great advance in pathological knowledge, and the better accommodation, &c., given in institutions?

I am, Sir, yours faithfully,

LIONEL A. WEATHERLY, M.D. Aberd.

Bournemouth, June 6th, 1914.

THE PREVALENCE OF SYPHILIS.

To the Editor of THE LANCET.

SIR,—In a leading article in THE LANCET of April 4th, 1914, reference was made to a letter published in the same issue from Mr. A. Corbett-Smith, the editor of the *Journal of State Medicine*, who suggested that there is exaggeration on the subject of the dissemination of syphilis.

It is always difficult at a distance to appreciate the full significance of statistics, and it is not remarkable that Mr. Corbett-Smith should have been led to think that an infection of 0·5 per cent. of the population of Melbourne was an official estimate. Such a belief, however, is far removed from fact. In the course of the letter he stated that—

> In an address delivered at the Paris Congress of the Royal Institute of Public Health it was stated by a well-known doctor that, upon expert opinion, "about 7 per cent. of the whole population of Melbourne was syphilitic, or 40,000 cases out of a population of 600,000." Upon this basis he calculated 500,000 cases for Greater London. But I find that the official estimate for Melbourne is about 5 per 1000, or, say, 3000 cases.

Now the official estimate for the distribution of syphilis was not 0·5 per cent. No official estimate has ever been made. During the course of the comprehensive inquiry into the distribution of syphilis in Melbourne made by the Government of Victoria, under the direction of Dr. Burnett Ham, syphilis was made a compulsorily notifiable disease within a radius of ten miles of the General Post Office for 12 months, but there was practically no obligation, other than a moral obligation, on a practitioner to report cases. In any event, only suspicious cases were reported. So it came about that during the year 5500 cases were reported. Of 5000 of these 3167 were proved to be syphilitic. 900 of the cases, however, came from one hospital, and many practitioners did not report any cases, so that the figures in no way show the distribution in the population, except that they proved conclusively that *at least* 0·5 per cent. were syphilitic. But during four months of the year all cases visiting my clinic at the eye and ear hospital on Monday and Thursday and on Tuesday and Friday afternoons, were subjected to the Wassermann test irrespective of the disease for which they applied. The result was that of those who attended on Mondays and Thursdays 13 per cent. were found to be syphilitic, and of those who attended on Tuesdays and Fridays 15·8 per cent. were syphilitic, or of the whole 550 cases examined 13·3 per cent. The people who attended were not usually suffering from obvious syphilitic diseases. Very few cases were even suspicious. They came to the hospital for spectacle fitting, to have foreign bodies removed from the cornea, and so on.

The above are some of the facts relating to the Melbourne investigation of syphilis and show how

it is that the misconception alluded to above has arisen. These facts were fully set out in *Bellrock* in January, 1913, and in the Proceedings of the Australasian Medical Congress, Sydney, 1911. Estimates of the distribution of syphilis can be best based on the results of the Wassermann method. There are other modes of investigation, such as the careful calculation of the distribution of general paralysis and tabes. It is, however, just as important to be sure that the extent is not under-estimated as it is that it should not be over-estimated.—I am, Sir, yours faithfully,

JAMES W. BARRETT, M.D. Melb., F.R.C.S. Eng.
Melbourne, May 6th, 1914.

DEFENSIVE FERMENTS OF THE ANIMAL ORGANISM.

To the Editor of THE LANCET.

SIR,—My attention has been drawn to the annotation on the Sero-Diagnosis of Cancer and the review of Professor E. Abderhalden's work on "Defensive Ferments of the Animal Organism," in the columns of THE LANCET of May 16th (pp. 1411 and 1399). The subject is one in which I am much interested, and I desire, at once, to associate myself entirely with you in admiration for the work of this distinguished scientist, the advances he has made in this important subject, the demonstration of specific protective ferments in the blood, and the serum tests he has devised in carcinoma and in pregnancy.

But may I point out that similar observations in regard to a defensive and induced tryptic and ereptic ferment response in the tissues in carcinoma, analogous to the ferment response in the bowel in normal processes of digestion, were published by me some years ago.[1] In particular, I referred to the intracellular ferment erepsin described by Vernon,[2] and to the facts of an increase of this ferment noted by him in the tissues investigated (kidney, liver, and cardiac muscle) in different conditions, and for instance in certain cases of cancer. This intracellular ferment increase seemed to me to be (*a*) similar to the adaptation or correlation of the various secretions and ferments to the different foodstuffs in the bowel in normal processes of digestion, described by Starling[3]; (*b*) to be called forth "irregularly, uncontrolled and unequal to the demand, save in rare instances of spontaneous cure"; or, (*c*) as I had suggested previously, "compensatory" in action.[4]

I should scarcely have ventured to trouble you but for the bearing such observations had, and have, on treatment. The production of trypsin and erepsin in the tissues was put forward by me in contradistinction to the administration of trypsin, and, alternatively, the use of prepared tissue extracts—normal, fœtal, and cancerous—was suggested. In this connexion at the time, and in view of Starling's work on "hormones" or chemical stimuli, I instanced a case of apparent recovery (three years) in sarcoma in the practice of the late J. H. Webb (Melbourne). He had treated the patient with prepared (acid) extract of fœtal tissues, and I suggested that it was not improbable "in thus administering an acid extract he may have been administering a fœtal 'secretin,' and that one or other excited the dissimilatory, breaking down, ereptic or tryptic ferment in his patient."

The principle of a ferment defensive response in the tissues is therefore now not only confirmed in the independent work of Abderhalden, as set forth in the annotation and review in your columns, but underlying methods of treatment by prepared tissues in inoperable cancer.

Furthermore, may I venture to point out that investigation of the blood in cancer and in other conditions has not been altogether neglected in this country. The opportunity of prosecuting work in this direction, and the modifications of the blood-serum exhibited after injections of various tissues, tissue extracts, and substances in animals, and after cancer inoculation, was afforded me by Professor W. D. Halliburton in the Physiological Laboratory, King's College, London. On the suggestion of Dr. Otto Rosenheim, investigation has been made on lipase, the fat-splitting enzyme of the pancreas, and partly in conjunction with him I published, in 1910, preliminary accounts of the results obtained.[5] Briefly, it was found that in certain cases of carcinoma the serum, while possessing no true fat-splitting action in itself, has the property of considerably increasing, accelerating, or activating the fat-splitting action of pancreatic extracts and pancreatic juice, compared with the action of normal serum. After injections with various tissues, tissue extracts, and substances in animals, as I showed later, and after inoculation with cancer tissue—prepared and fresh—and with cancer serum, this property is increased, while suggestions have been made by me from time to time not only in regard to the production of the fat-splitting ferment as a factor in the protective processes but in regard to sero-diagnosis and treatment.[6]

I am, Sir, yours faithfully,

June 4th, 1914. J. A. SHAW-MACKENZIE.

THE PLEA FOR IMMEDIATE OPERATION IN APPENDICITIS.

To the Editor of THE LANCET.

SIR,—After a quiescent interval of two years Sir George T. Beatson, in THE LANCET of May 30th, again advocates the policy of "wait and see" in the treatment of acute appendicitis which has existed for from three to four days.

By taking up this position Sir George Beatson makes one of two alternative claims. He must maintain either (1) that all perforated and gangrenous appendices *are* surrounded by localising adhesions, or (2) that he is able by the eye of faith to see, in a given case, what is happening within the abdomen. There is no alternative position. Both claims are equally indefensible. That in all cases the appendix is walled off is contrary to the experience of operating surgeons. At the Liverpool meeting of the British Medical Association in 1912 I gave a series of consecutive cases[1] in which in 46 per cent. of the patients there was a septic focus without any protective adhesions. It is difficult to believe that these

[1] Medical Press and Circular, July 17th and 24th, 1907.
[2] The Ereptic Power of Tissues as a Measure of Functional Capacity, by H. M. Vernon, M.A. Oxon., M.D., Journal of Physiology, 1905.
[3] The Chemical Correlation of the Functions of the Body, by E. H. Starling, M.D., F.R.S., THE LANCET, August, 1905.
The Nature and Treatment of Cancer, fourth edition, 1906.

[5] Proceedings of the Physiological Society, February, 1910; Journal of Physiology, 1910, vol. xl., pp. 8 and 12; also the Separation of Lipase from its Co-enzyme, by O. Rosenheim, p. 14; Proceedings of the Royal Society of Medicine 1910 (Pathological Section), vol. iii., p. 168.
[6] Proceedings of the Physiological Society, January, 1911; Journal of Physiology, 1911, vol. xlii., p. 11; Proceedings of the Royal Society of Medicine (Section of Therapeutics and Pharmacology), 1912, vol. v., pp. 152–61, and 1913, vol. vi., pp. 114–18; and Some Reactions of the Blood after Cancer Inoculation, Seventeenth International Congress of Medicine, London, 1913 (Section of Therapeutics).
[1] Brit. Med. Jour., 1912, vol. ii., p. 870

patients would have had a better chance without than with operation. During the discussion at the meeting and in the columns of a contemporary[2] I challenged Sir George Beatson to tell us *how* he can judge accurately of the condition of the appendix in a given case, how he can determine whether or not it is shut off by adhesions, and how he can foretell the future course of the disease—whether resolution will occur or whether gangrene with diffuse peritonitis will ensue. The answer has yet to come! I venture to think that no one dare claim such clinical acumen. And yet nothing short of such insight and prophetic talent can justify procrastination in a case of acute appendicitis.

There are still over 2000 deaths from appendicitis annually in England and Wales, and this high mortality rate will continue until the teaching prevails that operation should in every case be performed as soon as possible. It should not be necessary to discuss the question whether or not to operate during the third and fourth days of the disease: operation should be performed within the first 48 hours. As Dr. John B. Murphy wrote as long ago as 1890, "every case of appendicitis brought to the surgeon with pus outside the appendix is incontrovertible proof that the case was badly managed up to that time."

I am, Sir, yours faithfully,

HERBERT J. PATERSON.

Upper Wimpole-street, W., June 4th, 1914.

A PRINCIPLE OF DIETETICS.

To the Editor of THE LANCET.

SIR,—I notice that in your issue of June 6th Dr. J. Sim Wallace takes me to task for having told a lay audience that it is absurd to instruct mothers of the working classes to give their children raw fruit at the end of every meal in order to cleanse their teeth. Well, Sir, with all deference, I think such instruction *is* absurd. In the first place raw fruit at every meal all the year round is a luxury which poor people cannot afford, and in the second place I venture to think that even if it could be afforded it would do the children's digestion more harm than it would do good to their teeth.

I hope, however, that Dr. Wallace will succeed in his desire to start a discussion in your columns on oral sepsis and its prevention. As a small contribution to it, may I suggest that the pathological consequences of oral sepsis tend at the present moment to be greatly exaggerated?

I am, Sir, yours faithfully,

ROBERT HUTCHISON.

Queen Anne-street, W., June 9th, 1914.

To the Editor of THE LANCET.

SIR,—I gather from Dr. J. Sim Wallace's letter in your issue of June 6th that Dr. Robert Hutchison is horrified at the idea of a child eating a raw apple at bedtime (or after its last meal), and neither Dr. Hutchison nor Dr. Wallace appears to approve the old adage, "Eat an apple going to bed and make the doctor beg his bread." My own experience is quite in its favour. An apple eaten after the last meal, which, of course, is better taken at least two hours before bedtime, leaves the mouth in a clean and comfortable condition, is a good aperient, and can hardly be a serious difficulty to the digestion. But children are often supposed to need some *bonne bouche* to go to bed on. Would Dr. Hutchison say an apple is more injurious than cake or chocolates? I should prefer the apple if some sacrifice must be made to Moloch. I enclose the instructions issued in this borough. Dr. Wallace is mainly responsible for them, but Dr. Hutchison was consulted. I hope the alterations made in deference to his opinion will have exempted the instructions from his condemnation.

I am, Sir, yours faithfully,

SIDNEY DAVIES.

Public Health Department, Town Hall, Woolwich, June 8th, 1914.

[2] Ibid., p. 147. THE LANCET, August 17th, 1912, p. 448.

"PURELY MOTOR" NERVES.

To the Editor of THE LANCET.

SIR,—In connexion with your annotation in THE LANCET of June 6th on Dr. J. Ramsay Hunt's paper on "The Neural Atrophy of the Muscles of the Hand, without Sensory Disturbances," a strong protest ought to be, I think, made against his statement that the thenar branch of the median and the volar branch of the ulnar are purely *motor* nerves. Not only is this incorrect, but there is no known instance in any vertebrate of a purely *muscular* nerve which does not contain afferent fibres. In short, there is no such thing as a purely *motor* nerve. Let us take the thenar and the volar nerves: the muscles which are supplied by them receive no other nerve-supply; now anyone can by squeezing his own thenar and hypothenar muscles satisfy himself that they receive afferent algetic nerve fibres; therefore the thenar and volar nerves convey these afferent fibres. The experimental proof of the truth of my contention is so easy that I forbear to point out how it can be proved experimentally that these two branches are mixed nerves like all the other 20 or 30 purely *muscular* branches which exist in man. Now Dr Hunt bases his conclusion that the thenar and volar branches are purely *motor* solely on his failure to find sensory changes in any of his cases; but it is to be noted that nowhere in this paper of his (April, 1914) nor in any of his earlier papers on this subject in American journals does he state whether he applied digital or algometric deep pressure over the atrophied muscles; the only objective sensory tests mentioned by him are those for touch, pain (by which he probably means pin-prick), and temperature. But even the algometer might fail to settle the matter, because even if the algetic afferent fibres passing to these atrophied muscles were completely degenerated there would still be at least some pain on firm pressure of the skin over them on account of the preservation of cutaneous sensibility; but a careful comparison between the two sides might possibly show at least a slight diminution of pressure-pain sensibility on the affected side. Apart from this possibility—one which has apparently never yet been tested in one of these rare cases—there is only one way by which the matter could be effectually tested in a living man—viz., by cutting down on the atrophied muscles and then squeezing or compressing them; in this manner the element of cutaneous sensibility would be eliminated. As the pathological basis of Dr. Hunt's syndrome is doubtless, as he teaches, a slow compression neuritis (really nerve degeneration) of these two muscular nerves, I feel convinced that sensory changes are really always present in these cases in the shape of a relative diminution of the muscle-pain sensibility on the affected side. We cannot and never shall be able to tell whether it is entirely lost because the crucial experiment is never likely to be tried on a patient

in the manner which I have just indicated. I need hardly say we are all grateful to Dr. Hunt for telling us of the existence of this important, though relatively rare, group of thenar and hypothenar atrophies. But purely *motor* nerves have no existence.

I am, Sir, yours faithfully,

London, N.W., June 6th, 1914. LEONARD J. KIDD.

THYROID INSUFFICIENCY.

To the Editor of THE LANCET.

SIR,—The interesting letter of Dr. C. W. Crawshaw in THE LANCET of May 30th on Thyroid Extract in Nervous Disorders leads me to call attention to another class of cases in which there seems to be some insufficiency of thyroid secretion, although not enough to cause the classic symptoms of myxœdema. My attention was called to this class of cases some years ago by my friend Dr. Morgan Dockrell, of London, and since then I have met several, all of which have been much benefited by the administration of thyroid extract. The following case is typical.

A middle-aged man, organically sound, had suffered for many years from bad circulation, feelings of cold, and liability to chill. His temperature was usually about 1°F. below the normal. In winter he had to use an enormous quantity of bedclothes, and, even with those, he usually woke up feeling cold and miserable. There was breathlessness on exertion. He had become quite bald in early life. After taking thyroid extract for a little while he began to experience an unwonted feeling of warmth. Cold feet and hands became warm. He gradually dispensed with some of the bedclothes, so that he now uses only about one-third as much as formerly. The temperature rose to normal. The heart's action became stronger and steadier, and he can now take violent exercise which was formerly impossible. The progressive loss of hair has ceased, and the scalp, which was formerly as polished as a billiard ball, now shows an abundant growth of downy hairs. The amount of hair on the body has also increased. The patient feels quite a new man and much more vigorous than formerly.

I have had several other cases in which alleviation of similar symptoms has been brought about by thyroid extract, and it seems, I think, quite evident that the extract supplies something which in these instances is wanting in the system.

I am, Sir, yours faithfully,

JOHN P. HENRY, M.D., B.Ch. Dub.

Galway, June 1st, 1914.

LONDON PANEL COMMITTEE AND THE SUPPLY OF LOCUM TENENTS.

To the Editor of THE LANCET.

SIR,—Our attention has been drawn to the report in the *British Medical Journal* Supplement of May 30th last of a meeting of the London Panel Committee which was held on May 25th. That committee passed a resolution undertaking to supply "deputies" to panel practitioners, and we learn with no slight astonishment that the proposal was stated to have met "with the approval of the medical and transfer agencies."

As we have never been approached on the matter we take this opportunity of informing the medical profession that we strongly object to this unauthorised assertion, and the more so as we know that the above committee further discussed the question of undertaking the transfer of practices.

Whilst reserving our opinion as to its statutory powers to transact such business, we are reluctant to believe that medical men can be in sympathy with this movement.

We are, Sir, yours faithfully,

J. FIELD HALL
(Field Hall, Ltd.).
HERBERT NEEDES.
J. C. NEEDES.
PEACOCK AND HADLEY.
J. A. REASIDE.
(The Medical Agency).
A. V. STOREY
(General Manager of the Scholastic, Clerical, and Medical Association, Ltd.).
PERCIVAL TURNER.

London, W.C., June 9th, 1914.

MUST THE DOCTOR BE A COMMON INFORMER?

To the Editor of THE LANCET.

SIR,—As the matter is of such grave moment I wish to draw your readers' attention to the decision of the General Medical Council in one of the recent penal cases.

A practitioner attended a female who had had a miscarriage. She pledged him to secrecy. The patient died from peritonitis. The doctor being bound by law to certify the "cause of death" wrote in his certificate "peritonitis and cardiac failure." Because he did not also state the concomitant fact of the abortion the General Medical Council concludes that he has been properly convicted of a misdemeanour. It is not permissible to say more, for the case has not formally concluded, but the opinion already given by the General Medical Council seems to lay a new burthen on practitioners

1. Cause is usually interpreted in law to mean immediate operative antecedent. Now it seems we must not only give immediate cause of death, as peritonitis, but, under peril of being unfrocked, the cause of peritonitis, as dirty instrument; the cause of virulence of dirt, as streptococci; the cause of activity of streptococci, as mixed infection, &c.

2. Every medical man in practice is often asked to bring about abortion. This alone being a criminal offence, it would seem he is bound to hand over the offender to justice.

3. Transmission of contagious disease being a grave offence, it would seem that to prevent this misdemeanour the doctor is bound to notify the wife or other person likely to be affected by the patient suffering from infectious sore.

I am, Sir, yours faithfully,

J. C. MCWALTER, M.D., LL.B.,
Barrister-at-Law.

Dublin, June 7th, 1914.

SOCIETY OF TUBERCULOSIS OFFICERS.

To the Editor of THE LANCET.

SIR,—With reference to Dr. Thompson Campbell's letter on the above subject, in your issue of to-day's date, may I say that I recently joined the Tuberculosis Society (secretary, Dr. W. O. Pitt, Walthamstow, Essex), and that I was informed that this body already numbered about 60 tuberculosis officers amongst its members?

I am, Sir, yours faithfully,

June 6th, 1914. TUBERCULOSIS OFFICER.

THE NATIONAL INSURANCE ACT.

FRIENDLY SOCIETIES AND NATIONAL INSURANCE.

AT the annual conference of delegates from the lodges of the Manchester Unity of Oddfellows held at Aberystwith, and at the annual meeting of delegates of the Hearts of Oak Benefit Society held in London, the effects of national insurance upon the position of these important societies occupied a prominent place in the presidential addresses delivered. In each case satisfaction was expressed at the increased membership and at the proportion of members who had joined for the purposes of State insurance and had also insured independently. Both chairmen spoke of the suggestion that voluntary State insurance might some day take the place of the present compulsory system, the chairman of the Oddfellows saying:—

Compulsory insurance has come, and it has come to stay. No thinking man attaches any importance to the purely tactical suggestion that a voluntary measure of insurance could now be substituted.

The president of the Hearts of Oak meeting said on this subject:—

I am strongly opposed to any legislation which will bring about the abolition of the compulsory principle of the Insurance Act, first, because we all know that the Act would not have been required if it had not been for the millions of people who would not voluntarily join any Friendly Society, and who, by their apathy and indifference, really constituted a serious danger to the community; and, secondly, in the interests of the Approved Societies themselves, who, having now got new machinery to meet the new conditions, are beginning to breathe more freely with the improved working of the machine.

The latter speaker made the following remarks upon the subject of alleged excessive expenditure upon sickness benefit:—

Referring to the experience of the working of the Insurance Act in regard to sickness, he saw no reason to pay too much attention to the alarmist rumours which were rife a few months ago. In regard to the alarm in certain quarters as to the abnormal sickness experienced by women members, while he agreed that very great caution was necessary, he did not share the pessimistic views expressed in many quarters.

The chairman of the Manchester Unity condemned the administration of sickness benefit by competing Approved Societies, amounting, he stated, to 23,500, as producing lack of uniformity and confusion. He predicted that at no very distant date the State would undertake the administration of the Act through its own officials, and he believed that the change would be advantageous to the voluntary thrift movement. With regard to the inequalities arising under the present system of administering sickness benefit, he said:

Some Approved Societies, notably those connected with trade unions, administer sickness benefit as though it were intended to relieve not only sickness but also unemployment and that morbid disinclination to work which is so prevalent amongst some classes of the community. Others interpret the phrase "incapable of work" so strictly as to deny sickness benefit in some cases to those who are legitimately entitled to it.

ABERDEENSHIRE INSURANCE COMMITTEE.

At a meeting of the Aberdeenshire Insurance Committee held on May 29th the communication of the executive committee of the Scottish Association of Insurance Committees, inviting opinion as to the desirability of amending the Act with the view of empowering the Commissioners to dispense with the necessity of county committees constituting district committees, came up, and it was unanimously decided to approve the resolution. With regard to dispensing by medical practitioners, the committee decided that those doctors who dispensed their own medicines before the Act came into operation should be allowed to continue to do so, and that those doctors who did not dispense medicines prior to the inauguration of the Act should not be allowed to do so now. The report of the finance subcommittee in connexion with the 20 per cent. deduction on doctors' payments and chemists' accounts was adopted, with the addition of a resolution that the committee make immediate representation to the Insurance Commissioners to the effect that protests had been received from the chemists and doctors against the action of the committee in not fulfilling their bargain, and that the committee be immediately placed in funds to pay both the chemists and the doctors 95 per cent. of the amounts due to them.

Medical News.

UNIVERSITY OF CAMBRIDGE.—Dr. C. S. Myers, Director of the Psychological Laboratories, gives notice that during the Michaelmas term he will give a course of lectures in the Psychological Laboratory on General and Experimental Psychology, considered especially in relation to Medicine. These lectures are intended for medical students and for candidates for Part I. of the Diploma in Psychological Medicine. They will be given on Mondays, Wednesdays, and Fridays, at 9 A.M., beginning on Friday, Oct. 16th, and in connexion with them a practical class will be held. Those who wish to attend this course are requested to inform Dr. Myers before August 1st. Instruction in the physiology of the central nervous system, suitable for the above-named candidates, is provided in the course of lectures given by Dr. H. K. Anderson in the Physiological Laboratory on Tuesdays, Thursdays, and Saturdays, at 9 A.M. (beginning on Oct. 15th), with practical work on Mondays, Wednesdays, and Fridays, at 10 A.M.—The following medical degrees have been conferred:—

M.D.—A. H. Gosse, Caius; E. G. White, Christ's.
M.B., B.C.—M. H. Watney, Trinity; G. Sparrow, Caius.
M.B.—C. W. Archer, Trinity; H. J. S. Shields, Jesus.

BRITISH HOSPITALS ASSOCIATION CONFERENCE.—As we have already announced, the fifth annual conference of the British Hospitals Association will be held in the library of the Royal Victoria Infirmary, Newcastle-on-Tyne, from June 18th to 20th, under the presidency of the Lord Mayor of Newcastle, Sir George Hare Philipson acting as deputy chairman. Among the papers to be read is one by Dr. G. H. Hume on the Voluntary Hospital on its Trial, while Mr. P. J. Michelli, C.M.G., will open a discussion on Pensions for Hospital Officers. The association, of which Sir William Osler is the retiring president, has done much useful work in connexion with hospital economy and management.

THE BROWN INSTITUTION.—The annual report of the superintendent of the Brown Animal Sanatory Institution (Mr. F. W. Twort) has been received by the Senate of the University of London, and states that in the year 1913 the total number of examinations of animals made was 7036 and the total number of animals brought to the institution was 6022, of which 565 were in-patients at the hospital. Animals under treatment included 3956 dogs, 1355 cats, and 535 horses, the commonest diseases being distemper, mange, and scabies in dogs and lameness in horses. It was estimated that 400 animals were sent away to veterinary surgeons, treatment being refused on the grounds that the owners could afford to pay the proper fees. Of the 565 in-patients, 520 were cured or relieved, 17 died, and 28 were destroyed as incurable.

The research work of the laboratory attached to the institution included investigations on the thyroid gland, Johne's disease, tuberculosis, leprosy, and infantile diarrhœa, the last investigation being carried out for the Local Government Board.

Dr. Benjamin Moore, F.R.S., Johnston Professor of Bio-chemistry in the University of Liverpool, has accepted an appointment at the laboratory at Mount Vernon, Hampstead, which is to be opened in October next for research work under the National Insurance Act.

THE REBUILDING OF THE CHELSEA HOSPITAL FOR WOMEN.—On Tuesday last the foundation stones of the new Chelsea Hospital for Women and of the Nurses' Home in connexion with it were laid by the Earl and Countess Cadogan, the site having been generously furnished by Lord Cadogan.

THE NEW TREASURERS OF ST. GEORGE'S HOSPITAL.—Lord Greville and Sir Gerard Lowther have accepted the invitation of the committee of management of St. George's Hospital to become joint honorary treasurers of the charity, filling the vacancies caused by the recent resignations of Lord Plymouth and Mr. A. W. West.

RESEARCH DEFENCE SOCIETY.—The annual general meeting will be held at the house of the Royal Society of Medicine, 1, Wimpole-street, Cavendish-square, W., on Tuesday, June 30th, at 4.30 P.M. The president, Lord Lamington, will give an address, and the annual report will be submitted for adoption. After the business of the meeting there will be a demonstration with the kinematograph.

BRUSSELS MEDICAL GRADUATES' ASSOCIATION.—A dinner of this association will be held under the presidency of Dr. Howard Humphris at the Garden Club, Anglo-American Exhibition, on Wednesday, June 17th, at 7.30 P.M. All graduates of the University of Brussels will be welcome, and members are invited to bring ladies. Tickets, price 7*s.* 6*d.* (not including wine), may be obtained from the honorary secretary, Dr. Arthur Haydon, 29, Broadhurst-gardens, Hampstead, N.W.

ROYAL INSTITUTE OF PUBLIC HEALTH.—Dr. L. Vaillard, Inspector-General in the French Army Medical Service, will deliver the Harben lectures on Wednesday, Friday, and Monday, July 1st, 3rd, and 6th, at 5 P.M., in the lecture room of the institute, 37, Russell-square, W.C. He has taken as his subjects: (1) "Carriers from a Public Health Point of View"; (2) "The Etiology and Prophylaxis of Tetanus from a Consideration of Researches of the Past 30 Years"; (3) "House Flies and Public Health." All interested are invited to attend, and communications should be made to Dr. E. W. Hope, honorary secretary of the institute.

Parliamentary Intelligence.

NOTES ON CURRENT TOPICS.

The Milk and Dairies Bill.

A BETTER reception was given to the Milk and Dairies Bill on second reading in the House of Commons on Tuesday, June 9th, than was the fate of previous measures dealing with the same subject in recent years. In such a Bill as this pains have to be taken to meet the objections of the agricultural interest. The first speaker in the debate, Mr. CHARLES BATHURST, who represents an agricultural constituency, made it clear that the compromise which was alluded to on the introduction of the measure was accepted. The honourable Member went on to say that the Central Chamber of Agriculture and other leading agricultural organisations unanimously asked the House to accept the second reading of the Bill. They, however, hoped that no drastic amendments would be introduced in committee such as would destroy the compromise. He thought that there ought to be a certified supply of milk as was in force in the United States.

Criticism of the Bill was confined to details, and as a rule it was of a friendly character. Dr. ADDISON, who considered the Bill immensely valuable, thought that the Government ought to have proceeded by investing the larger authorities rather than the smaller ones with powers of action under the Bill. He made an important point by asking that the reports on milk-supplies should be made by medical officers who had a reasonably secure tenure. He also supported the contention that the certification of milk should be introduced into the Bill. A grading of milk would create public favour for clean milk. Mr. H. FORSTER regretted that the Bill did not deal a little more thoroughly with milk-supply as a whole. He admitted that it would do something to punish impurities, but it would not make the supply cheaper or more plentiful.

Mr. ASTOR dealt at some length with the provision of the Bill forbidding the sale of tuberculous milk. The country, he thought, could not afford by a stroke of the pen to wipe out 10 per cent. of the milk-supply. In his opinion the improvement ought to be made by a process of gradually raising the standard and by grading and classifying the milk. In the course of the subsequent debate a general agreement was disclosed on the desirability of securing a pure milk-supply, but various Members took objection to the provisions for the taking of samples for dealing with suspected cows, for the inspection of labourers, and also as to the compensation to be paid to farmers.

Mr. HERBERT SAMUEL, President of the Local Government Board, who is in charge of the Bill, replied to the debate and expressed satisfaction at the friendly reception which had been given to the Bill. He would, he said, approach the consideration of amendments with an open mind. He was particularly glad that the spokesmen of the agricultural interest had on the whole expressed a favourable opinion of the measure. Of course, he regarded milk producers not as persons to be harassed, but as persons whose business was indispensable to the nation. It was essential to maintain the cheapness of the milk-supply, and the Bill would be mischievous indeed if it sent up the price to the poorer classes. He did not believe that it would do anything of the sort. The regulations which the Government had in view were not designed to impose expense, but to enforce care. With regard to the authorities who were to administer the Bill, it had been urged that these should be the county and not the district authorities. But he would remind the House that in this matter it was not dealing with a *tabula rasa*. The district councils had the administration of the Diseases of Animals Acts. They already appointed inspectors to inspect the cattle, and there would be much complaint if the county councils were required to appoint another set of veterinary inspectors. If there was a general desire for the codification of the law relating to the milk-supply after the Bill passed, he should be glad to introduce a measure to bring all the existing law on the subject into one statute. Some honourable Members had taken objection to the inspection of labourers under the Bill, but the object of the provision was to secure that persons who were dirty should not contaminate the milk. There was also the case of the person with diseased hands. It was certainly essential to deal with that point. He did not view with any favour the proposal to have certified or graded milk, if that was to be a substitute for the proper regulation of the whole of the milk-supply. It would not be enough to say that the wealthy and well-to-do classes could obtain proper milk by paying for it and to leave the rest of the community without full protection. That was not a policy which could commend itself to the House of Commons. But the principle of the certification of milk was one which had very much to commend it. He did not introduce it into the Bill because he wanted to proceed very cautiously. He was quite content to leave that subject to be discussed in committee. If it appeared that a proposal was desired to protect those who chose to certify milk and to penalise those who wrongly claimed that the milk which they sold was certified, then he would be quite prepared to be guided in that matter by the committee. He sincerely trusted that the Bill would become law this year.

The second reading was agreed to without a division.

Milk and Dairies (Scotland) Bill.

The second reading of the Milk and Dairies (Scotland) Bill was also agreed to after a very brief debate. It was stated that the apprehensions of agriculturists had been met on many points, but there were still matters which would have to be considered in committee.

HOUSE OF COMMONS.

TUESDAY, JUNE 9TH.

Grants for Sanatoriums.

Mr. GODFREY LOCKER-LAMPSON asked the President of the Local Government Board whether, in a circular of April, 1913, certain figures were given to county councils on the subject of grants to be made by the Board to councils for the purpose of erecting sanatoriums; whether certain councils based their calculations on that circular; whether the Board had recently written stating that they must not be held as committing themselves to a grant, on the ground that it would be impossible to make grants at the rates referred to in the circular; and whether he proposed to take any action in the matter.—Mr. HERBERT SAMUEL replied: No circular was

issued on this subject in April, 1913. The Local Government Board explained the basis on which grants were proposed to be made towards the cost of new sanatoria in a circular issued on May 14th, 1912, and in a further circular of Feb. 25th, 1913, they indicated that other considerations besides the population of the area would have to be taken into account in distributing the capital grant. I understand that some misconception has arisen in certain counties as to the amount of capital grant which is available in aid of the provision of hospital beds for the treatment of tuberculosis, but the maintenance grant of one-half the net cost of all schemes of treatment approved by the Board will make the total grants towards the cost of providing both sanatoria and hospitals for treating tuberculosis considerably larger than was contemplated in the circular of May 14th, 1912.

The Drug Fund.

Mr. LOCKER-LAMPSON asked the honourable Member for St. George's-in-the-East whether he was aware that a meeting was called in Lancashire recently, at the instance of the Pharmaceutical Society of Great Britain, in consequence of the deficiency in Insurance Committees' Drug Fund, which was increasing to a marked extent; and whether he could now make any announcement as to the payment of chemists' accounts.—Mr. WEDGWOOD BENN answered: The honourable Member is misinformed. The conference in question was convened to consider the most economical method of carrying out the necessary administrative work in connexion with the scrutiny of prescriptions.

Forcible Feeding of Suffragist Prisoners.

Mr. WEDGWOOD asked the Home Secretary on how many occasions and in what prisons the prison doctor had refused to feed forcibly a suffragist prisoner.—Mr. MCKENNA replied: There has been no such refusal by a prison doctor.

The Supply of Radium.

Mr. H. LAWSON asked the Secretary of State for Foreign Affairs whether any steps had been taken or were proposed to be taken by foreign Governments to limit or control the export of radium, with the object of reserving the home supplies in the first instance for the satisfaction of the home demand for radium for use in the treatment of disease.—Sir E. GREY answered: I understand that the Austrian Government in 1912 acquired the mines in the Joachimstal, from which the greater part of the world's supply of radium is said to be derived. In 1908 State control was established in Saxony over the search for and exploitation of minerals and water containing radium. I have no information as regards the steps taken by these or any other Governments to limit or control the export of radium, but I will make inquiries as to any regulations at present in force or in contemplation.

Sleeping Sickness Report.

Sir J. D. REES asked the Secretary of State for the Colonies what action would be taken on the Inter-departmental Committee's Report on Sleeping Sickness; and whether he had taken note of the Committee's finding that any such drastic measure as a general destruction of wild animals was not justified by the evidence.—Mr. L. HARCOURT replied: I am consulting the Governors of our colonies and protectorates in tropical Africa with regard to the recommendations of the Committee, and in the meantime I am not in a position to make a statement. I have noted the finding referred to.

WEDNESDAY, JUNE 10TH.

Chemists' Accounts.

Mr. G. LOCKER-LAMPSON asked the honourable Member for St. George's-in-the-East whether certain Scottish chemists had become so anxious about the payment in full of their accounts in respect of insured persons that they had threatened to discontinue the supply of medicines to insured persons unless satisfactory assurances were forthcoming; and whether the Scottish Commissioners had received representations to that effect.—Mr. WEDGWOOD BENN said in reply: The Scottish Insurance Commissioners have not received any such general representations as the honourable Member suggests. Two pharmaceutical committees have communicated with the Insurance Commissioners. The Scottish accounts for drugs will be dealt with in exactly the same manner as the drug accounts in other parts of the country.

Mr. LOCKER-LAMPSON asked the honourable gentleman what was the approximate proportion of insurance committees that had paid by way of advance less than 90 per cent. of the chemists' accounts for the quarter ending April, 1914.—Mr. WEDGWOOD BENN answered: The information for which the honourable Member asks could only be obtained by calling upon all the 198 insurance committees in Great Britain to prepare a special return.

Mr. CASSEL asked whether the honourable gentleman could give any assurance that the chemists would ultimately be paid their balance in full.—Mr. WEDGWOOD BENN replied that the chemists would be paid in accordance with the terms of the agreement which they had voluntarily entered into.

Mr. LOCKER-LAMPSON asked whether it was the case that the Birmingham Chemists' Committee had only a balance of £400 with which to pay a balance of £5000.—Mr. WEDGWOOD BENN answered that if the honourable Member would put a question on the notice paper the figures would be examined.

Mr. WORTHINGTON EVANS asked whether it was not the fact that in some cases the chemists had only received 17*s.* or 18*s.* in the £ for work done and drugs supplied.—Mr. WEDGWOOD BENN replied that he could not say in reply to a general question of this kind. Perhaps the honourable Member would put down in a question the case he had in mind.

Appointments.

Successful applicants for vacancies, Secretaries of Public Institutions and others possessing information suitable for this column, are invited to forward to THE LANCET Office, directed to the Sub-Editor, not later than 9 o'clock on the Thursday morning of each week, such information for gratuitous publication.

ALLEN, JOHN, M.B., Ch.B., Vict., D.P.H., has been appointed Clinical Tuberculosis Officer under the Insurance Act and Assistant Medical Officer at Bury.

BROWNLEE, JOHN, M.D., C.M. Glasg., has been appointed Medical Statistician under the Government Medical Research Committee.

BROWNLIE, WILLIAM BARRIE, F.R.C.S. Edin., M.B., Ch.B. Glasg., has been appointed Honorary Assistant Ophthalmic Surgeon to the Blackburn and East Lancashire Royal Infirmary.

RANSFORD, W. R., L.D.S. Eng., has been appointed Dental Surgeon to the Civil General Hospital, Rangoon.

RENSHAW, ARNOLD, M.B., B.S. Lond., has been appointed Bacteriologist to the Manchester Royal Eye Hospital.

Vacancies.

For further information regarding each vacancy reference should be made to the advertisement (see Index).

ASHTON-UNDER-LYNE UNION WORKHOUSE.—Resident Medical Officer and Resident Assistant Medical Officer. Salaries £350 and £150 per annum respectively, with rations, laundry, and residence.

BARNET, CLARE HALL SANATORIUM, South Mimms.—Assistant Resident Medical Officer. Salary £120 per annum, with board, lodging, and laundry.

BARROW-IN-FURNESS, NORTH LONSDALE HOSPITAL.—House Surgeon. Salary £150 per annum, with residence, board, and laundry.

BEDFORD COUNTY HOSPITAL.—Assistant House Surgeon. Salary £80 per annum, with board, lodging, and laundry.

BELGRAVE HOSPITAL FOR CHILDREN, Clapham-road, S.W.—House Surgeon for six months. Salary at rate of £75 per annum, with board, residence, and washing.

BETHLEM ROYAL HOSPITAL, Lambeth-road, S.E.—Second Assistant Medical Officer, unmarried. Salary £200 per annum, with apartments, board, and laundry.

BIRKENHEAD BOROUGH HOSPITAL.—Senior House Surgeon. Salary £120 per annum, with board and laundry.

BIRMINGHAM AND MIDLAND HOSPITAL FOR SKIN AND URINARY DISEASES.—Clinical Assistant for afternoon attendance. Also Clinical Assistant to Electrical Department. Salary in each case at rate of 52 guineas per annum

BIRMINGHAM, CITY FEVER HOSPITAL, Little Bromwich.—Assistant Medical Officer. Salary £200 per annum, with board and residence.

BIRMINGHAM CITY HOSPITAL, Lodge-road.—Assistant Resident Medical Officer. Salary £200 per annum, with board, residence, &c.

BIRMINGHAM GENERAL DISPENSARY.—Resident Medical Officer, unmarried. Salary £240 per annum, with apartments, fire, lights, and attendance.

BIRMINGHAM GENERAL HOSPITAL.—Assistant Physician. Salary £50 per annum.

BIRMINGHAM, JAFFRAY BRANCH OF GENERAL HOSPITAL, Gravelly Hill.—Resident Medical and Surgical Officer. Salary £150 per annum, with board, residence, and washing.

BIRMINGHAM, SALTERLEY GRANGE SANATORIUM FOR CONSUMPTIVES, near Cheltenham.—Resident Medical Officer. Salary £300 per annum, with board, &c.

BIRMINGHAM UNION, DUDLEY-ROAD INFIRMARY.—Second Assistant Medical Officer and Fourth Assistant Medical Officer. Salary £160 and £140 per annum respectively, with apartments, rations, laundry, and attendance.

BOLTON INFIRMARY AND DISPENSARY.—Third House Surgeon. Salary £110 per annum, with apartments, board, and attendance.

BOOTLE BOROUGH HOSPITAL.—Senior and Junior House Surgeons. Salaries £120 and £100 respectively, with residence, board, and laundry.

BRADFORD ROYAL INFIRMARY.—House Surgeon, unmarried. Salary £100 per annum, with board, residence, and washing.

BRIGHTON, ROYAL ALEXANDRA HOSPITAL FOR SICK CHILDREN.—House Surgeon. Salary at rate of £100 per annum, with board, lodging, and washing.

BRISTOL EDUCATION COMMITTEE.—School Medical Officer. Salary £500 per annum.

BRISTOL ROYAL INFIRMARY.—House Surgeon for Throat, Nose, and Ear Department. Salary at rate of £100 per annum, with board, lodging, and laundry.

BURLEY-IN-WHARFEDALE, WEST RIDING ASYLUM, Scalebor Park.—Assistant Medical Officer. Salary £250 per annum, with board, residence, and laundry. Or Locum Tenens to end of September. Salary £5 5s. per week.

BURNLEY, VICTORIA HOSPITAL.—House Surgeon. Salary £135 per annum, with residence, board, and washing.

BURY INFIRMARY.—Junior House Surgeon. Salary £150 per annum, with board, residence, and washing.

BURY ST. EDMUNDS, WEST SUFFOLK GENERAL HOSPITAL.—Resident Medical Officer, unmarried. Salary £120 per annum, with board, lodging, and laundry.

CANTERBURY, KENT AND CANTERBURY HOSPITAL.—House Surgeon and Junior House Surgeon, unmarried. Salaries £100 and £90 per annum respectively, with board, lodging, and washing. Also Honorary Surgeon.

CARDIFF, KING EDWARD VII.'s HOSPITAL.—House Surgeon for the Ophthalmic and Ear, Nose and Throat Departments. Salary £100 per annum, with board, residence, and laundry. Also Two House Surgeons for six months. Salary at rate of £60 per annum, with board, residence, and laundry.

CHELSEA HOSPITAL FOR WOMEN.—Anæsthetist. Salary £21 per annum.

CHESHIRE COUNTY COUNCIL.—Four District Tuberculosis Officers. Salaries £350 per annum.

CHESTERFIELD AND NORTH DERBYSHIRE HOSPITAL.—Junior House Surgeon. Salary £90 per annum, with board, apartments, and laundry.

CITY OF LONDON HOSPITAL FOR DISEASES OF THE CHEST, Victoria Park, E.—House Physician for six months. Salary at rate of £75 per annum, with board, residence, and washing. Also Clinical Assistant in Out-patient Department.

CLAPHAM MATERNITY HOSPITAL.—Assistant Medical Woman for Battersea District Maternity. Salary £50 per annum, with board and residence.

COLCHESTER, ESSEX COUNTY HOSPITAL.—House Surgeon. Salary £100 per annum, with board, washing, and residence.

CUMBERLAND COUNTY COUNCIL.—Three Assistant County Medical Officers. Salary £350.

DARLINGTON HOSPITAL AND DISPENSARY.—House Surgeon, unmarried. Salary £200 per annum, with board, lodging, and laundry.

DERBY, DERBYSHIRE ROYAL INFIRMARY.—House Physician and Assistant House Surgeon. Salaries £120 and £80 per annum, respectively, with residence, board, and laundry.

DEVONPORT, ROYAL ALBERT HOSPITAL.—House Surgeon, unmarried. Salary £150 per annum, with board and laundry.

DREADNOUGHT HOSPITAL, Greenwich.—Assistant Surgeon.

DUNDEE ROYAL INFIRMARY.—House Surgeon. Also Out-door Maternity Assistant for three months. Salary each at rate of £40 per annum, with board, lodging, and laundry.

DURHAM COUNTY SANATORIUM.—Medical Superintendent. Salary £400 per annum, with residence and personal board.

EPSOM, LONDON COUNTY EPILEPTIC COLONY.—Assistant Medical Officer. Salary £290 per annum, with board, lodging, and washing, if unmarried, or £90 a year in lieu if married and non-resident.

EVELINA HOSPITAL FOR SICK CHILDREN, Southwark, S.E.—House Surgeon and House Physician. Salary in each case at rate of £75 per annum, with board, residence, and washing. Also Surgeon to Out-patients. Also about Ten Clinical Assistants in Out-Patient Departments.

GREAT NORTHERN CENTRAL HOSPITAL, Holloway-road, N.—Anæsthetist. Salary 10 guineas per annum. Also Surgeon.

HALIFAX ROYAL INFIRMARY.—Second House Surgeon and Third House Surgeon, unmarried. Salary £120 and £100 per annum respectively, with residence, board, and washing.

HAMMERSMITH METROPOLITAN BOROUGH.—Medical Officer of Health. Salary at rate of £600 per annum.

HAMPSTEAD GENERAL AND NORTH-WEST LONDON HOSPITAL, Hampstead and Camden Town.—Physician to Out-patients.

HERTFORD COUNTY HOSPITAL.—Resident House Surgeon, unmarried. Salary £100 per annum, with board, washing, and apartments.

HOLBORN UNION.—Second Assistant Medical Officer at Infirmary, Archway-road, Upper Holloway, N. Salary £150 per annum, with board, apartments, and washing. Also Temporary Assistant Medical Officer at Infirmary, Cleveland-street, W. Salary at rate of £180 per annum, with residential allowances.

HOSPITAL FOR EPILEPSY AND PARALYSIS AND OTHER DISEASES OF THE NERVOUS SYSTEM, Maida Vale, W.—Resident Medical Officer for six months. Salary at rate of £75 per annum, with board, lodging, and washing. Also Assistant Physician.

HOSPITAL FOR SICK CHILDREN, Great Ormond-street, London, W.C.—House Surgeons and House Physician, unmarried, for six months. Salary in each case £30, with board, residence &c.

HOSPITAL FOR WOMEN, Soho-square, W.—Resident Medical Officer for six months. Salary at rate of £80 per annum.

HUDDERSFIELD ROYAL INFIRMARY.—Assistant House Surgeon. Salary £80 per annum, with board, rooms, and washing.

HULL ROYAL INFIRMARY.—Casualty House Surgeon. Salary at rate of £90 per annum, with board and lodging.

INDIAN MEDICAL SERVICE.—Thirteen Commissions.

KING EDWARD VII. SANATORIUM, Midhurst, Sussex.—Second Assistant Medical Officer, unmarried. Salary £150 per annum, with board, lodging, and attendance.

KING'S LYNN, WEST NORFOLK AND KING'S LYNN HOSPITAL.—House Surgeon. Salary £150 per annum.

LAHORE MUNICIPAL COMMITTEE, Punjab, India.—Health Officer. Salary £600 per annum.

LEEDS GENERAL INFIRMARY.—Resident Ophthalmic Officer. Salary £100 per annum, with board, residence, and laundry.

LEICESTER ROYAL INFIRMARY.—House Physician for six months. Salary at rate of £100 per annum, with board, apartments, and washing.

LIVERPOOL, HIGHFIELD INFIRMARY, Knotty Ash, near Liverpool.—Assistant Medical Officer. Salary £160 per annum, with apartments, &c.

LONDON LOCK HOSPITAL.—House Surgeon to Female Hospital, Harrow-road, W. Salary £100 per annum, with board, residence, and washing.

MACCLESFIELD GENERAL INFIRMARY.—House Surgeon. Salary £150 per annum, with residence, board, and laundry.

MAIDSTONE, KENT COUNTY ASYLUM.—Fourth Assistant Medical Officer, unmarried. Salary £250 per annum, with quarters, board, attendance, washing, &c.

MANCHESTER, ANCOATS HOSPITAL, Mill-street.—Assistant House Surgeon. Salary £70 per annum, with board and residence

MANCHESTER, HULME DISPENSARY, Dale-street, Stretford-road.—House Surgeon. Salary £180 per annum, with apartments, attendance, &c.

MANCHESTER NORTHERN HOSPITAL FOR WOMEN AND CHILDREN, Parkplace, Cheetham Hill-road.—House Surgeon. Salary £120 per annum, with apartments and board.

MANCHESTER ROYAL INFIRMARY.—Surgical Registrar. Salary £75 per annum. Also Medical Officer for Out-patients and Accidents and Assistant Director in Clinical Laboratory for six months. Salary at rate of £100 per annum, with board and residence. Also Assistant Director in Clinical Laboratory. Salary £75 per annum.

MANCHESTER, ST. MARY'S HOSPITALS FOR WOMEN AND CHILDREN.—House Surgeon. Salary at rate of £50 per annum, with board and residence.

NEWCASTLE-UPON-TYNE, UNIVERSITY OF DURHAM COLLEGE OF MEDICINE.—Demonstrator of Anatomy. Salary £200 per annum.

NEW HOSPITAL FOR WOMEN, Euston-road.—Female Obstetric Assistant for six months. Also Resident Medical Officer at House of Recovery, New Barnet, for six months. Salary £60. Also Two Clinical Assistants in Out-patient Department. Also Anæsthetist.

NORTHAMPTON GENERAL HOSPITAL.—Senior Resident Medical Officer, unmarried. Salary £140 per annum. Also Two House Surgeons, unmarried. Salary £120 per annum each. Apartments, board, washing, attendance, &c., in each case.

NORTHAMPTONSHIRE COUNTY COUNCIL EDUCATION COMMITTEE.—Assistant School Medical Officer. Salary £275 per annum.

NORWICH, CITY OF.—Assistant School Medical Officer and Assistant Medical Officer of Health. Salary £300 per annum.

NORWICH, JENNY LIND HOSPITAL FOR SICK CHILDREN.—Female Resident Medical Officer for six months. Salary £50 per annum, with board, apartments, and laundry.

NOTTINGHAM, BAGTHORPE INSTITUTION AND INFIRMARY.—Resident Assistant Medical Officer, unmarried, for six months. Salary at rate of £165 per annum, with apartments, &c.

NOTTINGHAM GENERAL HOSPITAL.—Assistant House Physician for six months. Salary at rate of £100 per annum, with board, residence, and laundry.

PADDINGTON GREEN CHILDREN'S HOSPITAL, London, W.—House Surgeon for six months. Salary at rate of £80 per annum, with board, residence, and washing.

PLYMOUTH, SOUTH DEVON AND EAST CORNWALL HOSPITAL.—House Physician for six months. Salary £90 per annum, with board, residence, and washing.

PRESTON, COUNTY ASYLUM, Whittingham, Lancs.—Junior Assistant Medical Officer and Assistant Medical Officer, unmarried. Salary £250 per annum, with board, apartments, &c.

PUTNEY HOSPITAL, Putney Common, S.W.—Resident Medical Officer. Salary £100 per annum, with rooms, board, and laundry.

QUEEN'S HOSPITAL FOR CHILDREN, Hackney-road, Bethnal Green, E.—House Physician and House Surgeon for six months. Salary £80 per annum each, with board, residence, and washing.

ROCHDALE INFIRMARY AND DISPENSARY.—Junior House Surgeon, unmarried. Salary £110 per annum, with board, residence, and laundry.

ROTHERHAM HOSPITAL.—Senior and Junior House Surgeons. Salaries £200 and £100 respectively, with board, lodging, and washing.

ROYAL EYE HOSPITAL, Southwark, S.E.—Junior House Surgeon for six months. Salary £50 per annum, with board and residence.

ROYAL HOSPITAL FOR DISEASES OF THE CHEST, City-road, E.C.—Resident Medical Officer for six months. Salary at rate of £120 per annum, with board, lodging, and washing.

ROYAL INSTITUTE OF PUBLIC HEALTH.—Director of Laboratories of State Medicine (Bacteriological and Chemical). Salary £400 per annum. Also Demonstrator in Bacteriological Laboratories. Salary £200 per annum.

ROYAL NAVAL MEDICAL SERVICE.—Twenty-five Appointments.

ROYAL WESTMINSTER OPHTHALMIC HOSPITAL, King William-street, West Strand, W.C.—Physician.

ST. ALBANS, HERTS COUNTY ASYLUM, Hill End.—Second Assistant Medical Officer, unmarried. Salary £250 per annum, with board, lodging, and washing.

ST. MARY'S HOSPITAL, Paddington, W.—Obstetric Surgeon in Charge of Out-patients.

ST. PANCRAS DISPENSARY, 39, Oakley-square, N.W.—Resident Medical Officer, unmarried. Salary £105 per annum, with residence and attendance.

ST. PAUL'S HOSPITAL FOR SKIN AND GENITO-URINARY DISEASES, Red Lion-square, Holborn, W.C.—Clinical Assistant in Out-patient Department.

SALFORD UNION INFIRMARY.—Senior Assistant Medical Officer and Resident Assistant Medical Officer, unmarried. Salaries £200 and £150 per annum respectively, with apartments, attendance, and rations.

SHEFFIELD, EAST END BRANCH OF THE CHILDREN'S HOSPITAL (OUT-PATIENT DEPARTMENT).—House Surgeon. Salary £120 per annum, with board and residence.

SHEFFIELD ROYAL INFIRMARY.—House Surgeon and Ophthalmic House Surgeon for six months. Salary £100 per annum each, with board and residence.

SHEFFIELD UNION HOSPITAL, Firvale.—Resident Assistant Medical Officer, unmarried. Salary £180 per annum, with apartments, rations, &c.

SHREWSBURY, SALOP INFIRMARY.—House Physician. Salary at rate of £110 per annum, with board and apartments.

STOCKPORT INFIRMARY.—Junior House Surgeon. Salary £100 per annum, with board, washing, and residence.

STOKE-ON-TRENT, NORTH STAFFORDSHIRE INFIRMARY, Hartshill.—House Physician. Also Casualty and Out-patient Officer, both unmarried, for six months. Salary at rate of £120 per annum each, with board, residence, and washing.

SUNDERLAND ROYAL INFIRMARY.—Junior House Surgeon. Salary £100 per annum, with board, residence, and laundry.

SWANSEA GENERAL AND EYE HOSPITAL.—Two House Surgeons. Salary £125 per annum, with board, washing, and attendance.

WAKEFIELD, WEST RIDING ASYLUM.—Assistant Medical Officer. Salary £200 per annum, with apartments, board, washing, and attendance. Also Locum Tenens Assistant Medical Officer for summer months. Apartments, board, travelling expenses, and salary as arranged.

WALSALL AND DISTRICT HOSPITAL.—Assistant House Surgeon. Salary £110 per annum, with board, residence, and laundry.

WANDSWORTH UNION INFIRMARY, Ouseley-road, Balham, S.W.—Senior Assistant Medical Officer, unmarried. Salary at rate of £150 per annum, with board, lodging, and washing.

WEST BROMWICH AND DISTRICT HOSPITAL.—Assistant Resident House Surgeon and Anæsthetist, unmarried. Salary £100 per annum, with board, residence, and washing.

WEST HAM AND EASTERN GENERAL HOSPITAL.—Junior House Physician and Junior House Surgeon. Salary at rate of £75 per annum, with board, residence, and washing.

WEST HARTLEPOOL, CAMERON HOSPITAL.—House Surgeon, unmarried. Salary £150 per annum, with board and rooms.

WEST LONDON HOSPITAL, Hammersmith-road, W.—House Physician. Also Resident Casualty Officer. Both for six months. Board, lodging, and laundry provided.

WEST LONDON DISTRICT SCHOOLS, Ashford, Middlesex.—Non-Resident Medical Officer. Salary at rate of £200 per annum, with extra fees.

WESTMINSTER HOSPITAL.—Assistant House Physician and Assistant House Surgeon. Board provided in each case.

WESTMINSTER UNION INFIRMARY, Fulham-road, S.W.—Third Assistant Medical Officer. Salary £140 per annum, with board, residence, and washing.

WEST SUSSEX COUNTY COUNCIL.—Temporary Assistant Medical Officer. Salary at rate of £6 6s. per week, with maintenance allowance and travelling expenses.

WIGAN, ROYAL ALBERT EDWARD INFIRMARY AND DISPENSARY.—Senior House Surgeon. Salary £170 per annum, with board, apartments, and washing.

WIMBLEDON BOROUGH, PUBLIC HEALTH DEPARTMENT.—Female Assistant Medical Officer of Health. Salary £300 per annum.

WOLVERHAMPTON AND MIDLAND COUNTIES EYE INFIRMARY.—House Surgeon. Salary £120 per annum, with apartments, board, and laundry.

YORK DISPENSARY.—Resident Medical Officer, unmarried. Salary £160 per annum, with board, lodging, and attendance.

THE Chief Inspector of Factories, Home Office, London, S.W., gives notice of vacancies for Certifying Surgeons under the Factory and Workshop Acts at Cambuslang, in the county of Lanark; at Langholm, in the county of Dumfries; at Osmotherley, in the county of York; and at Whalley, in the county of Lancaster.

THE Secretary of State gives notice of a vacancy for a Medical Referee under the Workmen's Compensation Act, 1906, for the Sheriffdom of Fife and Kinross, attached more particularly to the Kirkcaldy District. Application should be made to the Scottish Office.

Births, Marriages, and Deaths.

BIRTHS.

DRUITT.—On June 7th, at Saffron Walden, Essex, the wife of Daniel Cuthbert Druitt, M.R.C.S., L.R.C.P., of a daughter.

GORDON.—On May 30th, at Westholme, Horncastle, Lincs, the wife of Dr. F. Jervis Gordon, of a son.

HUTCHINSON.—On June 8th, at 5, The Parade, Carmarthen, the wife of R. C. Hutchinson, M.B., Ch.B., D.P.H., of a daughter.

LOW.—On June 5th, at Harley-street, W., the wife of V. Warren Low, M.D., F.R.C.S., of a son.

MCNEILL.—On June 3rd, at Quay-road, Bridlington, Yorkshire, the wife of Duncan McNeill, M.B., C.M., of a daughter.

MILLIGAN.—On June 2nd, at Quarry-street, Guildford, the wife of J. Knowles Milligan, M.R.C.S., L.R.C.P., of a daughter.

ONSLOW-FORD.—On June 2nd, at Wendover, Bucks, the wife of Max Onslow-Ford, M.R.C.S., L.R.C.P., of a daughter.

SANGUINETTI.—On June 2nd, at Campden House-road, W., the wife of Harold H. Sanguinetti, M.B., B.Ch., of a daughter.

MARRIAGES.

LEE—NICHOLSON.—On June 3rd, at the Cathedral Church of St. Mary, Edinburgh, Robert Hammersley Lee, M.D., to Marjory, elder daughter of Professor J. Shield Nicholson and Mrs. Nicholson, Bedford Park, Edinburgh.

TROTTER—PIERCE.—On June 10th, at St. Mary's, Nottingham, by the Venerable the Archdeacon of Aston, assisted by the Rev. E. Huntley Gordon, Vicar of St. Catherine's, Leslie Batten Currie Trotter, M.A., M.D., B.C. Camb., of "Rossway," Ledbury, Herefordshire, son of Leslie B. Trotter, M.D., Malvern, to Hilda Mary, younger daughter of Mr. and Mrs. John Pierce, 3, Elm-avenue, Nottingham.

WALBRUGH—GRAY.—On April 14th, at St. James's Church, Highflats, Natal, A. A. Walbrugh, M.D., to Margaret Isabella, only daughter of the late Walter Gray and Mrs. Gray, of Helmsley.

DEATHS.

BRETON.—On June 5th, at Langrish, Petersfield, William Edward Breton, Inspector-General of Hospitals and Fleets, R.N. (retired), aged 64 years.

NOBLE.—On June 3rd, at Holywood Hall, Wolsingham, county Durham, Joseph William Noble, M.D. Cantab., L.R.C.P., aged 46 years.

WRIGHT.—On June 6th, George Angus Wright, M.B., of Uxbridge-road, London, W., aged 38 years.

N.B.—A fee of 5s. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Notes, Short Comments, and Answers to Correspondents.

ROGER BACON.

THE seventh centenary of the birth of Roger Bacon was celebrated this week at Oxford. The "Admirable Doctor" was born at Ilchester in Somerset in 1214. Although he studied at Oxford he was ordered to Paris, but his too great proficiency in natural science exposed him there to severe treatment. His Opus Majus cost him an enormous amount of money to write. His part in discoveries in astronomy, chemistry, physics, geometry, mechanics, and optics is now better understood, although his own generation appears to have treated him largely as a wizard or pretender. Posterity seems to be quite willing to pay compensation for the persecutions which the famous Franciscan friar suffered from his contemporaries. The introduction to the Opus Majus by Dr. Bridges shows us that he was a famous forerunner of modern thought.

INCOME-TAX CLAIMS.

To the Editor of THE LANCET.

SIR,—Every year since the earned rate has been in force large numbers of taxpayers have been required to pay income-tax at the unearned or higher rate for the simple reason that they have neglected to make the return for assessment to income-tax which is now due to be made. In the case of persons whose incomes do not exceed £1000 the earned rate is 9*d.* in the £, but if they neglect to make a return and to claim the earned rate before Sept. 30th they will be charged at a higher rate, and the tax payable may be nearly double. Let your readers make their returns at once; the difference is worth saving.

I am, Sir, yours faithfully,
E. MONTAGUE,
Secretary, the Income-tax Adjustment Agency, Limited, 9/11, Poultry, London, E.C., June 8th, 1914.

LUXOR AS A HEALTH RESORT.

Dr. W. E. Nickolls Dunn and Dr. G. Vigers Worthington, superintendent medical officers to the Luxor Hospital for natives, have just issued the second edition of their little handbook to Luxor, which gives in small compass, and illustrated with good photographs and a sketch map, an account of this pleasant winter resort in Upper Egypt. Medical men thinking of sending patients to this part of Africa will find in it useful hints on the selection of cases, climatic conditions, and other matters. It is published by H. K. Lewis at 1*s.* 6*d.* net.

M. B. A.—(1) An account of Binet's method of testing mental development in children will be found in La Mesure du Développement de l'Intelligence chez les Jeunes Enfants. Bulletin de la Société Libre pour l'Étude Psychologique de l'Enfant. Paris: F. Alcan. Price Fr.1.50. Our correspondent is also referred to "Feeble-mindedness and the Measurement of the Intelligence by the Method of Binet and Simon," by Dr. W. C. Sullivan, in THE LANCET, March 23rd, 1912, p. 777, and annotation with the same title in the same issue, p. 810. (2) The Second International Congress on School Hygiene took place in the University of London from August 5th to 10th, 1907, under the presidency of Sir Lauder Brunton, Bart. The preceding congress was held at Nuremberg in 1904 under the presidency of H.R.H. Prince Louis Ferdinand of Bavaria. The third congress took place in Paris in 1910 under the patronage of the French Minister of Public Instruction. The fourth congress took place at Buffalo, New York, U.S.A., from August 25th to 30th, 1913

A. B. (*Wellingborough*) has omitted to enclose his name and full address.

COMMUNICATIONS not noticed in our present issue will receive attention in our next.

A DIARY OF CONGRESSES.

We shall publish this diary from time to time that our readers may have under their hands the dates of the approaching scientific Congresses. It is unnecessary to issue the lists of all these functions week by week, and we propose to make only such gatherings as will occur in the immediate future the subject of regular announcement. The following Congresses, Conferences, and Exhibitions are announced:—

May 1st–Nov. 1st (Lyons).—International Town Hygiene Exhibition.
,, 15th–Oct. 15th (Berne).—Swiss National Exhibition.
May–October (London, Shepherd's Bush).—Anglo-American Exposition.
June 15th (The Hague).—Third International Opium Convention.

June 15th–18th (Portsmouth).—International Abolitionist Conference (Prostitution).
,, 18th–20th (Newcastle-upon-Tyne).—Fifth Annual Conference of the British Hospitals Association.
,, 18th–24th (London, Church House, Westminster).—International Conference on the Blind.
,, 22nd–26th (Atlantic City, N.J.).—American Medical Association.
June–July (Groningen).—University of Groningen 300th Anniversary Celebration.
July 2nd and 3rd (Liverpool).—National Conference on Infant Mortality.
,, 6th–11th (Blackpool).—Twenty-ninth Congress of the Royal Sanitary Institute.
,, 7th and 8th (Leeds).—Sixth Annual Conference of the National Association for the Prevention of Consumption, &c.
,, 7th–10th (St. John, N.B.).—Canadian Medical Association.
,, 8th–10th (Oxford).—Ophthalmological Congress.
,, 15th–20th (Edinburgh).—Congress of the Royal Institute of Public Health.

Medical Diary for the ensuing Week.

SOCIETIES.

ROYAL SOCIETY, Burlington House, London, W.

THURSDAY.—Surgeon-General Sir D. Bruce, Major A. E. Hamerton, Captain D. P. Watson, and Lady Bruce: (1) Trypanosome Diseases of Domestic Animals in Nyasaland. Trypanosoma Caprae (Kleine)—Part III., Development in Glossina Morsitans. (2) Trypanosomes found in Wild Glossina Morsitans and Wild Game in the "Fly-belt" of the Upper Shiré Valley. (3) The Food of Glossina Morsitans. (4) Infectivity of Glossina Morsitans in Nyasaland during 1912 and 1913.—Mr. E. T. Halnan and Mr. F. H. A. Marshall: On the Relation Between the Thymus and the Generative Organs, and on the Influence of these Organs upon Growth. With a Note by Mr. G. U. Yule (communicated by Prof. J. N. Langley).—Mr. H. E. Roaf: The Vapour Pressure Hypothesis of Contraction of Striated Muscle (communicated by Prof. C. S. Sherrington).—Mr. A. N. Drury: The Validity of the Microchemical Test for the Oxygen Place in Tissues (communicated by Mr. W. B. Hardy).—Prof. J. S. Macdonald: Man's Mechanical Efficiency (communicated by Prof. C. S. Sherrington).—Dr. A. Holt: The Colouring Matters in the Compound Ascidian Diazona Violacea, Savigny (communicated by Prof. W. A. Herdman).

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

TUESDAY.
GENERAL MEETING OF FELLOWS at 5 P.M.
Ballot for Candidates for Fellowship.

THURSDAY.
SECTION OF DERMATOLOGY (Hon. Secretaries—J. M. H. MacLeod, S. E. Dore): at 4.30 P.M.
Cases:
Dr. Graham Little: (1) Pellagra with Skin Symptoms; (2) Trophoedema; (3) Favus in a Mouse.
Dr. Pernet: (1) Two Cases of Favus; (2) Bullous Ichthyosis.
Dr. Bunch: Paget's Disease of the Nipple.
Dr. Knowsley Sibley: (1) Urticaria Pigmentosa; (2) Adenoma Sebaceum.
Dr. I. J. Davies: Two Cases of Erythema Due to Carbon Monoxide Poisoning.

UNITED SERVICES MEDICAL SOCIETY, Royal Army Medical College, Grosvenor-road, S.W.
MONDAY.—4 P.M., Annual General Meeting.

LONDON DERMATOLOGICAL SOCIETY, St. John's Hospital, 49, Leicester-square, W.C.
TUESDAY.—4.30 P.M., Annual Meeting. Clinical Meeting. Cases will be shown by Dr. Dockrell, Dr. Bunch, Dr. Sibley, Dr. Griffith, Dr. Phibbs, and Dr. Gooding. 5.15 P.M., Discussion on Some Points in the Treatment of Syphilis (opened by Mr. C. H. Mills).

ROYAL METEOROLOGICAL SOCIETY, 70, Victoria-street, Westminster, S.W.
WEDNESDAY.—4.30 P.M., Papers:—Mr. B. C. Wallis: The Rainfall of the Southern Pennines.—Mr. H. J. Bartlett: The Relation between Wind Direction and Rainfall.

MEDICAL SOCIETY OF LONDON, 11, Chandos-street, Cavendish-square, W.
THURSDAY.—9 P.M., Lettsomian Lectures:—Dr. P. M. Sandwith: Dysentery. (Lecture III., illustrated by pictures and pathological specimens.)

WEST LONDON MEDICO-CHIRURGICAL SOCIETY, Kensington Town Hall.
FRIDAY.—8.15 P.M., Cavendish Lecture:—Dr. F. W. Mott: The Causes of Insanity. Followed by Annual Conversazione.

SOCIETY OF TROPICAL MEDICINE AND HYGIENE, 11, Chandos-street, Cavendish-square, W.
FRIDAY.—8.30 P.M., Paper:—Major S. P. James, I.M.S.: Mosquito Work in Ceylon.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

ROYAL COLLEGE OF PHYSICIANS OF LONDON, Pall Mall East.
THURSDAY.—5 P.M., Croonian Lecture:—Dr. E. Goodall: On Some Modern Aspects of Certain Problems in the Pathology of Mental Diseases.

MEDICAL GRADUATES' COLLEGE AND POLYCLINIC, 22, Chenies-street, W.C.
MONDAY.—4 P.M., Dr. G. N. Meachen: Clinique (Skin). 5.15 P.M., Lecture:—Dr. O. Grünbaum: Modern Methods of Examination of the Stomach.
TUESDAY.—4 P.M., Dr. J. Parkinson: Clinique (Medical). 5.15 P.M., Lecture:—Dr. D. Forsyth: The Diagnosis of Intracranial Tumours.
WEDNESDAY.—4 P.M., Mr. G. E. Waugh: Clinique (Surgical). 5.15 P.M., Lecture:—Mr. L. B. Rawling: Decompression of the Brain in Relation to Injury and Disease (lantern demonstration).
THURSDAY.—4 P.M., Mr. C. W. Howntree: Clinique (Surgical). 5.15 P.M., Lecture:—Dr. F. G. Crookshank: Croup.
FRIDAY.—4 P.M., Mr. R. R. James: Clinique (Eye).

POST-GRADUATE COLLEGE, West London Hospital, Hammersmith-road, W.
MONDAY.—10 A.M., Dr. Simson: Diseases of Women. 10.30 A.M., Medical Registrar: Demonstration of Cases in Wards. 12 noon, Dr. Bernstein: Pathological Demonstration. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. D. Armour: Operations. Dr. Pritchard: Bacterial Therapy Department. Mr. B. Harman and Mr. Gibb: Eye Department. 5 P.M., Lecture:—Dr. Pernet: Congenital Syphilis.
TUESDAY.—10 A.M., Dr. Robinson: Gynæcological Operations. Dr. Owen: Demonstration of Cases in Wards. 12 noon, Mr. T. Gray: Demonstration of Fractures, &c. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Baldwin: Operations. Dr. Davis: Diseases of the Throat, Nose, and Ear. Dr. Pernet: Diseases of the Skin. 5 P.M., Lecture:—Dr. Pernet: Lupus Vulgaris.
WEDNESDAY.—10 A.M., Dr. Saunders: Diseases of Children. Dr. Davis: Operations of the Throat, Nose, and Ear. 11 A.M., Mr. Souttar: Demonstration of Minor Operations. 12 noon, Lecture:—Mr. Souttar: Abdominal Diagnosis. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Pardoe: Operations. Dr. Simson: Diseases of Women. Mr. Gibb: Diseases of the Eye. 5 P.M., Lecture:—Dr. Pernet: Lupus Erythematosus.
THURSDAY.—9 A.M., Dr. Bernstein: Bacterial Therapy Department. 10 A.M., Dr. Simson: Gynæcological Demonstration. 12 noon, Lecture:—Dr. G. Stewart: Neurological Cases. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. D. Armour: Operations. Mr. B. Harman: Diseases of the Eye. 5 P.M., Lecture:—Mr. Ll. Williams: Dental Disease in Children and its Treatment.
FRIDAY.—10 A.M., Dr. Robinson: Gynæcological Operations. 10.30 A.M., Surgical Registrar: Demonstration of Cases in Wards. 12.15 P.M., Lecture:—Dr. Bernstein: Applied Pathology. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Baldwin: Operations. Dr. Davis: Diseases of the Throat, Nose, and Ear. Dr. Pernet: Diseases of the Skin. 5 P.M., Lecture:—Dr. Pernet: Psoriasis.
SATURDAY.—10 A.M., Dr. Saunders: Diseases of Children. Dr. Davis: Operations of the Throat, Nose, and Ear. Mr. B. Harman: Operations of the Eye. 12 noon, Lecture:—Mr. Souttar: Surgical Anatomy of the Abdomen. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Pardoe: Operations.

LONDON SCHOOL OF CLINICAL MEDICINE, Dreadnought Hospital, Greenwich.
MONDAY.—Out-patient Demonstrations:—10 A.M. Dr. H. B. Carlill: Medical. Mr. H. Curtis: Surgical. 12 noon, Mr. G. N. Biggs: Throat, Nose, and Ear.—2.15 P.M., Mr. W. Turner: Surgery. 3 P.M., Mr. W. Turner: Operations. 3.15 P.M., Sir Dyce Duckworth: Medicine. 4.15 P.M., Mr. R. Lake: Throat, Nose, and Ear.
TUESDAY.—Out-patient Demonstrations:—10 A.M., Dr. C. H. Zundel: Medical. Mr. Cole: Surgical. 12 noon, Dr. H. MacCormac: Skin.—2 P.M., Mr. L. McGavin: Operations. 2.15 P.M., Mr. R. Carling: Surgery. 3.15 P.M., Dr. G. Rankin: Medicine. 4.15 P.M., Sir Malcolm Morris: Skin. 4.30 P.M., Special Lecture:—Mr. I. Back: Hæmorrhoids.
WEDNESDAY.—Out-patient Demonstrations: 10 A.M., Dr. H. B. Carlill: Medical. Mr. Cecil Rowntree: Surgical. 11 A.M., Mr. R. R. Bickerton: Eye.—2 P.M., Mr. L. V. Cargill or Mr. Choyce: Operations. 2.15 P.M., Dr. F. Taylor: Medicine. 3.15 P.M., Mr. Cargill: Eye Clinique. 4.30 P.M., Mr. C. C. Choyce: Surgery.
THURSDAY.—Out-patient Demonstrations:—10 A.M., Dr. H. R. Prentice: Medical. Mr. H. Curtis: Surgical. 12 noon, Mr. G. N. Biggs: Throat, Nose, and Ear.—2 P.M., Mr. R. Carling or Mr. W. Turner: Operations. Dr. A. Davies: Pathological Demonstration. 3.15 P.M., Dr. R. Wells: Medicine. 4.30 P.M., Special Lecture:—Mr. H. Curtis: Modern Operations for the Radical Cure of Carcinoma of the Face and Lips.
FRIDAY.—Out-patient Demonstrations:—10 A.M., Dr. C. H. Zundel: Medical. Mr. Cole: Surgical. 12 noon, Dr. H. MacCormac: Skin.—2 P.M., Mr. L. McGavin: Operations. 2.15 P.M., Sir John Rose Bradford: Medicine. 3.15 P.M., Mr. L. McGavin: Surgery.
SATURDAY.—Out-patient Demonstrations: 10 A.M., Dr. H. R. Prentice: Medical. Mr. Cecil Rowntree: Surgical. 11 A.M. Mr. R. R. Bickerton: Eye.—10 A.M., Col. Barry: Radiography.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.
MONDAY.—Clinics:—10.30 A.M., Surgical Out-patient (Mr. R. Gillespie). 2.30 P.M., Medical Out-patient (Dr. T. R. Whipham); Gynæcological (Dr. Banister). 3 P.M., Medical In-patients (Dr. R. M. Leslie).
TUESDAY.—2.30 P.M., Operations. Clinics:—Medical Out-patient (Dr. A. G. Auld); Surgical (Mr. Howell Evans); Nose, Throat, and Ear (Mr. H. D. Gillies). X Ray and Electrical Methods (Dr. Metcalfe). 3.30 P.M., Medical In-patient (Dr. A. J. Whiting).
WEDNESDAY.—Clinics:—2 P.M., Throat Operations (Mr. Gillies). 2.30 P.M., Children's Out-patient (Dr. T. R. Whipham); Skin (Dr. G. N. Meachen); Eye (Mr. Dorell).
THURSDAY.—2.30 P.M., Gynæcological Operations (Dr. A. R. Giles). Clinics:—Medical Out-patient (Dr. A. J. Whiting); Surgical (Mr. Carson); X Rays and Electrical Methods (Dr. Metcalfe).
FRIDAY.—2.30 P.M., Operations. Clinics:—Medical Out-patient (Dr. A. G. Auld); Surgical (Mr. R. Gillespie); Eye (Mr. R. P. Brooks). 3 P.M., Medical In-patient (Dr. G. P. Chappel).

UNIVERSITY COLLEGE HOSPITAL MEDICAL SCHOOL (UNIVERSITY OF LONDON), University-street, Gower-street, W.C.
MONDAY.—5 P.M., Sydney Ringer Memorial Lecture:—Dr. T. R. Elliott: The Adrenal Glands.

ROYAL HOSPITAL FOR DISEASES OF THE CHEST, Medical School, City-road, E.C.
MONDAY.—1.30 P.M., Department for the Prevention of Consumption. 2 P.M., Cardiac Department, Dr. Stott; Out-patient Department, Dr. Phear, Dr. S. Thompson. 3 P.M., Wards, Dr. Phear.
TUESDAY.—9 A.M., Laryngological Department, Mr. Mant. 1.30 P.M., Department for the Prevention of Consumption. 2 P.M., Out-patient Department, Dr. M. Leslie, Dr. B. King; Operations, Mr. A. Evans. 3 P.M., Wards, Dr. White. 4 P.M., Wards, Dr. M. Leslie.
WEDNESDAY.—2 P.M., Wards, Dr. A. Davies; Out-patient Department, Dr. Drysdale, Dr. Kellie. 4 P.M., Wards, Dr. Drysdale. 4.30 P.M., Roentgen Ray Department, Dr. Jordan.
THURSDAY.—9.30 A.M., Dental Department, Mr. G. Thomson. 10 A.M., Cardiac Department, Dr. Stott. 1.30 P.M., Department for the Prevention of Consumption. 2 P.M., Out-patient Department, Dr. Phear, Dr. S. Thompson. 4.30 P.M. Laryngological Department, Mr. Mant.
FRIDAY.—1.30 P.M., Department for the Prevention of Consumption. 2 P.M., Wards, Dr. Calvert; Out-patient Department, Dr. M. Leslie, Dr. B. King. 5 P.M., Lecture-Demonstration:—Dr. S. Thompson: Clinical Demonstration on Pulmonary Osteo-Arthropathy (illustrated by the epidiascope).
SATURDAY.—10 A.M., Out-patient Department, Dr. Drysdale, Dr. Kellie. 11.30 A.M., Roentgen Ray Department, Dr. Jordan.

HOSPITAL FOR CONSUMPTION AND DISEASES OF THE CHEST, Brompton, S.W.
MONDAY.—Excursion to Frimley, leaving Waterloo at 1.5 P.M., conducted by Dr. Wethered.

CITY OF LONDON HOSPITAL FOR DISEASES OF THE CHEST, Victoria Park, E.
Course of Demonstrations for Post-Graduates:—
TUESDAY.—4 P.M., Dr. W. J. Hadley: The Prognosis of Heart Disease.
FRIDAY.—4 P.M., Mr. M. Davies: Review of Thoracic Surgery.

NATIONAL HOSPITAL FOR THE PARALYSED AND EPILEPTIC, Queen-square, Bloomsbury, W.C.
TUESDAY.—3.30 P.M., Clinical Lecture:—Dr. F. Batten: Cerebellar Disease.
FRIDAY.—3.30 P.M., Clinical Lecture:—Dr. P. Saunders: Use of Electrical Currents.

THE THROAT HOSPITAL, Golden-square, W.
MONDAY.—5.15 P.M., Special Demonstration of Selected Cases.
THURSDAY.—5.15 P.M., Clinical Lecture.

LONDON LOCK HOSPITAL, 91, Dean-street, Soho, W.
Special Course of Instruction in Venereal Diseases, for Post-Graduates and Students, with Practical Demonstrations of the Various Methods of Treatment:—
MONDAY.—Clinics:—1 P.M., Mr. Ryall; 6 P.M., Mr. Gibbs. 2 P.M., Lecture:—Mr. Ryall: Tertiary Lesions of the Tongue
TUESDAY.—Clinics:—2 P.M., Mr. Lane; 6 P.M., Mr. Paterson.
WEDNESDAY.—Clinic:—6 P.M., Mr. Shillitoe.
SATURDAY.—Clinic:—2 P.M., Mr. McDonagh.

MANCHESTER HOSPITALS POST-GRADUATE CLINICS.
TUESDAY.—MANCHESTER AND SALFORD HOSPITAL FOR SKIN DISEASES, Quay-street.—4.30 P.M., Mr. Savatard: Syphilis of the Skin.
THURSDAY.—ANCOATS HOSPITAL—4.30 P.M., Dr. D. E. Core: The Clinical Examination of the Sensory Nervous System.

ROTUNDA HOSPITAL POST-GRADUATE COURSES, Dublin.
MONDAY.—10 A.M., Obstetrical Lecture: Cæsarean Section and its Modifications. 11 A.M., Examination of Patients and Minor Operations.
TUESDAY.—10 A.M., Major Operations.
WEDNESDAY.—10 A.M., Obstetrical Lecture: Pubiotomy and Symphysiotomy. 11 A.M., Examination of Patients and Minor Operations.
THURSDAY.—10 A.M., Major Operations.
FRIDAY.—10 A.M., Gynæcological Lecture: Tumours of the Ovary and their Complications. 11 A.M., Examination of Patients and Minor Operations.

For further particulars of the above Lectures, &c., see Advertisement Pages.

EDITORIAL NOTICES.

IT is most important that communications relating to the Editorial business of THE LANCET should be addressed *exclusively* "TO THE EDITOR," and not in any case to any gentleman who may be supposed to be connected with the Editorial staff. It is urgently necessary that attention should be given to this notice.

It is especially requested that early intelligence of local events having a medical interest, or which it is desirable to bring under the notice of the profession, may be sent direct to this office.

Lectures, original articles, and reports should be written on one side of the paper only, AND WHEN ACCOMPANIED BY BLOCKS IT IS REQUESTED THAT THE NAME OF THE AUTHOR, AND IF POSSIBLE OF THE ARTICLE, SHOULD BE WRITTEN ON THE BLOCKS TO FACILITATE IDENTIFICATION

Letters, whether intended for insertion or for private information, must be authenticated by the names and addresses of their writers—not necessarily for publication.

We cannot prescribe or recommend practitioners.

Local papers containing reports or news paragraphs should be marked and addressed "To the Sub-Editor."

Letters relating to the publication, sale, and advertising departments of THE LANCET *should be addressed "To the Manager."*

We cannot undertake to return MSS. not used.

MANAGER'S NOTICES.

TO SUBSCRIBERS.

WILL Subscribers please note that only those subscriptions which are sent direct to the Proprietors of THE LANCET at their Offices, 423, Strand, London, W.C., are dealt with by them? Subscriptions paid to London or to local newsagents (with none of whom have the Proprietors any connexion whatever) do not reach THE LANCET Offices, and consequently inquiries concerning missing copies, &c., should be sent to the Agent to whom the subscription is paid, and *not* to THE LANCET Offices.

Subscribers, by sending their subscriptions direct to THE LANCET Offices, will ensure regularity in the despatch of their Journals and an earlier delivery than the majority of Agents are able to effect.

THE COLONIAL AND FOREIGN EDITION (printed on thin paper) is published in time to catch the weekly Friday mails to all parts of the world.

The rates of subscriptions, post free from THE LANCET Offices, have been reduced, and are now as follows:—

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SUBSCRIBERS ABROAD ARE PARTICULARLY REQUESTED TO NOTE THE RATES OF SUBSCRIPTIONS GIVEN ABOVE.

The Manager will be pleased to forward copies direct from the Offices to places abroad at the above rates, whatever be the weight of any of the copies so supplied.

SOLE AGENTS FOR AMERICA—MESSRS. WILLIAM WOOD AND CO., 51, Fifth Avenue, New York, U.S.A.

METEOROLOGICAL READINGS.

(Taken daily at 8.30 a.m. by Steward's Instruments.)

THE LANCET Office, June 10th, 1914.

Date.	Barometer reduced to Sea Level and 32° F.	Direction of Wind.	Rainfall.	Solar Radio in Vacuo.	Maximum Temp. Shade.	Min. Temp.	Wet Bulb.	Dry Bulb.	Remarks.
June 4	30·09	N.E.	...	119	72	52	55	60	Fine
,, 5	30·01	N.E.	0·01	102	60	52	50	54	Cloudy
,, 6	30·02	N.E.	0·11	79	58	50	51	53	Overcast
,, 7	29·79	N.W.	0·18	98	60	49	50	54	Cloudy
,, 8	29·62	N.E.	0·C7	107	58	45	47	51	Cloudy
,, 9	29·59	S.	0·09	101	61	48	50	53	Cloudy
,, 10	29·80	S.	...	122	67	51	55	59	Cloudy

The following magazines, journals, &c., have been received:—Indian Ambulance Gazette, Public Health, Guy's Hospital Gazette, Proceedings of the Royal Society of Medicine, Medical Officer, Monthly Cyclopedia, South African Nursing Record, Hospital News (New York), South African Medical Record, Annales de la Polliclinique Centrale, Tidsskrift for den Norske Lægeforening, Indian Medical Record, Archives of the Roentgen Ray, Canadian Medical Association Journal, Quarterly Journal of Microscopical Science, Pediatrics, American Journal of Medical Sciences, La Clinique Ophthalmologique, Archives of Pediatrics, Archives Générales de Médecine, Journal of Nervous and Mental Disease, British Journal of Dental Science, Review of Neurology and Psychiatry, Parasitology, &c.

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